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GUTTA-PERCHA

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**THE CONFERENCE AND ITS DELEGATES.**

IT is probable that there are at present in New York more individuals directly interested in rubber than have ever before been gathered in any American city. In addition to the list of distinguished delegates to the International Rubber Exposition and to the Conference, there are members of the great Commerce Congress in which forty nations are represented, delegates to the International Chemical Congress and individual representatives of the whole rubber trade.

That the Rubber Exposition should call together so great and notable a gathering is in no way remarkable. The last half dozen years have shown unparalleled expansion in both crude and manufactured rubber, an expansion that is far from reaching its limit, and indeed is going steadily on. To the many present, therefore, facing a future full of promise and growth, whatever their interest in rubber, from whatever part of the world they come, we offer felicitation and welcome.

**THE THIRD INTERNATIONAL RUBBER EXPOSITION.**

AS this number of THE INDIA RUBBER WORLD comes from the press on the day of the opening of the Third International Rubber and Allied Trades Exposition, it is not possible to speak of that enterprise as one that is complete and finished; but, by reason of the breadth with which it has been planned and the thoroughness of the preparations that have been made for it—preparations that have been in progress for over a year—it is quite possible to prognosticate with more than a fair degree of certainty the outcome of this event.

We cannot, of course, from this initial viewpoint, make any definite statements as to the success of the exhibition from the standpoint of popular appreciation and attendance; but as a great educator and stimulator of the trade, and as a revelation of what the rubber industry in this country is to-day, it is perfectly possible to speak now, and to speak with all confidence. Looked at from this point of view, its success is already achieved, and is beyond all question. It merits success in every direction and will doubtless realize it. It is a worthy enterprise. The plans were well and wisely laid and they have been carried out carefully, conscientiously and intelligently.

The two great London rubber expositions were not only trade successes but made a wide appeal to popular appreciation. It may not, to be sure, be quite safe to argue from British experiences to American probabilities, for conditions are somewhat different. It cannot be questioned that American manufacturers, and business men take a less enthusiastic interest in exhibitions in general than their English contemporaries. There is a temperamental difference between the English and Americans. It might be described as saying that Americans are more keenly alert to the immediate substantial results of any enterprise on which they embark; or viewed from another angle, it might be expressed in this way,—that our friends across the water have more imagination, that their commercial outlook is broader, that they are concerned with the future as well as the present. However it may be described, the fact undoubtedly remains that the English as a class are more ready to participate in exhibition enterprises than we are. As a result of this American hesitancy to take part in shows, some of our large manufacturers are not actively participating in this great international rubber exploitation; but, on the other hand, many are—enough at any rate to make a creditable display of American rubber manufactures.

Foreigners have taken an unexpectedly active part in

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this New York exhibition. They have contributed with a lavish hand. Take Brazil, for instance, which is represented by half a hundred commissioners, counting those from the national government and from various commercial bodies; while the material display takes the colossal form of nearly a hundred tons of the choicest rubber of that great rubber country. The plantation companies of the Far East—considering their remoteness from New York and the distance which it was necessary for them to cover in sending their exhibits—have not been far behind. This exhibition has not only brought together the most wonderful collection of crude rubber ever seen in this country, but it is doubtful if another such collection will be displayed again here for many years.

#### THE AWAKENING OF BRAZIL.

THE Ministry of Agriculture of Brazil has recently published in pamphlet form in English the decrees and regulations passed by the National Congress and approved by the President, looking to the encouragement of rubber production in that country. This action on the part of the great rubber republic is incomparably the most important step ever taken in that country to protect its leadership in rubber production.

Brazil is at last awake to the problem that confronts her, if she is to maintain her premiership in the world's rubber market. It would have been better if this awakening had come earlier, but the lost time can be made up by a vigorous prosecution of the campaign that has been marked out.

These decrees and regulations are carefully thought out and comprehensive, and should do much to stimulate a wide activity in rubber production in the Amazon country. A careful translation of the decrees was made, and presented in considerable detail in our June issue, but now that they have been further exploited by the Government for the benefit of English-speaking people, it may not be out of place briefly to review their general scope. They cover the following points:—The exemption from duties of all utensils and materials intended to be used in the culture of various rubber trees named in the decree, and in the harvesting and preparation of rubber extracted from those trees; the granting of liberal bonuses ranging from \$280 to \$800 to those who shall start new plantations and carry them to successful production; the establishment by the government of experiment and demonstration stations at convenient places in the different states lying within the rubber territory; the building of houses where immigrants brought into the rubber country may receive proper shelter and sanitary habita-

tion, and the building of hospitals where they may be given, free of charge, any necessary medical treatment; the construction of narrow gauge and other railways in various sections of the rubber country, including a railway from some convenient place on the Madeira-Mamoré railway to the frontier of Peru; the execution of work that shall make navigable for the shallow rubber boats various rivers where it is impossible now for these boats to operate; the promotion of many centres of food production for the maintenance of the rubber gatherers; the holding of triennial rubber exhibitions at Rio de Janeiro, intended for the instruction and encouragement of rubber growers; and other measures tending to stimulate the production of rubber and materially assist in the opening up of the rubber country.

Brazil is at last aroused to the necessity of the proper development of her vast and wonderful natural resources. She is profoundly to be congratulated on this awakened spirit. If she shall carry out with determination and energy the wise measures which her legislators have enacted, great will be her reward.

#### TWO GREAT SYNTHESISTS IN OUR MIDST.

DURING the past few days we have had two great champions of the new synthetic rubber in our midst or—as the purists would prefer to have us say—in the midst of us: Professor William F. Perkin, spokesman of the English group of rubber makers, and Dr. Carl Duisberg, director general of the Farbenfabriken of Elberfeld, Germany, leader of the German producers of artificial rubber. Both delivered able and exceedingly instructive addresses before the Congress of Applied Chemistry that held its sessions in New York during the first half of September. Both had much to say of deep interest, not only to the science of chemistry, but to the rubber industry. Both courteously received a representative of THE INDIA RUBBER WORLD and further elucidated the views presented in their lectures.

On another page will be found highly interesting interviews with both of these distinguished scientists, as well as other matters of importance relating to the absorbing synthetic problem. It is a matter of regret that the great allotment of space necessarily devoted in this issue to the Rubber Exposition, together with pressure of other matters, makes it impossible in this number to report Dr. Duisberg and Professor Perkin in full.

## OVERALLS ON TOP OF HARVARD.

WHEN young Roswell Colt, son of President S. P. Colt, of the United States Rubber Co., landed in New York recently on his uncompleted wedding tour, he, jointly with his distinguished father, was interviewed by representatives of the New York daily press; and in reply to the questions of one of his interviewers as to what his future plans were, he is reported to have replied: "We will travel about a while, and I'll show my bride my college—Harvard. Then we go to Montreal, where I'll buckle down to hard work, don overalls and become acquainted with every phase of the rubber business."

That reply of the young man that he would first visit his *Alma Mater* and then get into overalls, while intended only to throw light on his own personal plans, as a matter of fact flashed an illuminating shaft on a modern commercial situation of great significance, to wit: the efficacy of a liberal education—plus a pair of overalls.

A few years ago college men were looked upon with considerable suspicion in manufacturing circles. A college education was considered all well enough, as a preparation for the so-called liberal professions. University culture was thought to be quite the proper foundation for a career of theological argumentation, for the efficient, or at least for the harmless, administration of medicine, and for dealing in the shifty subtleties of the law; but when it came to commercial life—and particularly to the din and dust of the factory—four years spent amid the classic shades were currently believed to have a thoroughly incapacitating effect.

But now all this is changed. It has been discovered that a trained mind is preferable to an untrained mind, whether the work to be done is the inditing of sermons, the elucidating of an argument, or the running of a mixing machine; and companies that twenty years ago employed only "practical" men—those who had grown up in overalls—are now filling their important places with the possessors of sheepskins. As an illustration of that point, one of the large Akron factories recently applied to a Western college for a list of promising young graduates, and took five out of the last graduating class, to place in positions of prospective importance.

To be sure, not every college man is willing to don overalls. If he isn't, the factory is no place for him. But where is he willing to start at the very bottom, put on his working clothes with the other workmen, feed crude

rubber biscuit into the washing machine, go from that into the mixing room, thence to the calender room, and thus work his way up, his progress obviously ought to be much more rapid than that of his factory comrade whose whole schooling has been that of the shop, and whose outlook in life has always been closed in by the four walls of the factory.

The college, where it has the right material to work on, gives breadth of view, and range of vision, and quickens the imagination; and when range of vision and quickened imagination get on overalls—there ought to be some excellent work done.

## SYNTHETIC TIRES HAVE ARRIVED.

ON the evening of September 9, Americans took their first view of actual automobile tires made from genuine synthetic rubber. It was on the occasion of Dr. Duisberg's lecture before the chemists, and he illustrated the progress the Germans had made in the production of synthetic rubber by rolling out before the audience a set of tires constructed of rubber made in Germany—rubber which was innocent alike of plantation parentage and Amazonian ancestry. Moreover, these tires had not only been on actual wheels, but had carried an auto of weight and proportions 4,000 miles, and were still intact and unpunctured, and in fact apparently little worn, and full of promise for a few thousand miles more.

But the makers using the orthodox material that comes from Pará need not feel undue alarm, for there are only two sets of these synthetic tires in existence—the set the doctor exhibits and another set that were presented not long since to the Kaiser. Just what these two sets of tires cost, probably not even Dr. Duisberg himself could accurately state, but reflecting that the German chemists started out five years ago on this synthetic quest, and purposed to spend 1,000,000 marks a year on it, and further reflecting that these eight tires represent practically the only tangible and utilizable fruits of their efforts—apart of course from their great scientific value—it is obvious that they have come rather high. The Doctor does not expect to see synthetic tires on next year's output of autos. He is modest, and inclined to be patient. "Synthetic rubber," he says, "will surely not appear on the market in the immediate future; but I, for one, hope to live long enough to see art triumph over nature also in this industry."



### THE EUROPEAN COTTON MARKET.

**A**MONG the leading European consumers of American cotton, are the spinners of Germany and Austria. Owing to their constant and intimate relations with cotton manufacturers, spinners are in a position to forecast trade prospects from the point of view of consumption, as well as to form a more or less accurate idea of the speculative influences likely to affect the market.

Hence special interest attaches to the recent statements of the managing director of the Bamberg (Bavaria) Spinning Mills, and of the president of the Austrian Cotton Spinners' Association, Vienna, two of the most representative European authorities on the subject named.

The Bavarian director asks whether the 16-million bale crop is really insufficient to cover the wants of spinners, and whether the growing cotton is in a condition which leads to the expectation of higher prices through insufficiency of supply. While he considers these questions justified, he calls attention to the fact that nearly all private reports state that the area sown in cotton this year in the American cotton states, is only to an unimportant extent smaller than that of last year. At the same time, he refers to the effect which the cold and damp weather of the spring may have exercised upon the final result. Seeing, however, that planting conditions have been statistically favorable, speculators have only the weather to consider as a basis of operations for a rise.

The nominal quantity of 16 million bales for the crop of 1911-1912, he considers, on account of its defective quality for manufacturing purposes, can only be regarded as the equivalent of 15 million bales. As this quantity has proved sufficient, he urges that even should the new crop turn out to be only 13½ million bales, it would meet the absolute requirements of the world's spinning industry. The hopes which had been entertained of the German cotton yarn business in 1912 do not seem to have been fulfilled, and the position of German spinners is much worse than it was a year ago.

In the Austrian cotton spinning industry, the overproduction of recent years has led to radical measures. Under the auspices of the spinners' association, 90 leading Austrian spinning mills have come to an agreement for the regulation of production. This agreement does not apply to production generally, but to the share of the various mills in the domestic consumption of yarn, and the production of the quantities thus allotted. Thus the export trade of Austrian spinners does not apparently come under the new agree-

ment, which is intended to stop the losses which have arisen in the past from unrestrained competition in the home market.

As a leading German textile journal puts it, the further development of the cotton market is "a book with seven seals." Among the factors meriting consideration, besides the weather and the attitude of spinners, is the consumption of next year. The consumption of yarn in 1912 having exceeded that of 1911 by 10 per cent., it is urged that weavers' stocks have probably been replenished, so that a further increase in consumption is not anticipated for 1913.

### TWO MONTHS FOR COUNTERFEITING A TRADE MARK.

**A**N interesting trade-mark case recently occurred in Russia, as reported in the Bulletin published by the United States Trade Mark Association. Five directors of a certain Russian rubber company have been adjudged guilty of counterfeiting the trade-mark of a German company, and each has been sentenced to a term of two months in jail.

The Russian trade-mark law provides that any dealer or manufacturer who makes unauthorized use upon his goods, wrappers, labels or in any of his advertising, of another's trade-mark, or who uses a trade-mark so closely resembling another's that it is likely to be mistaken for it, is liable to a maximum penalty of eight months' imprisonment.

We have been in the habit of considering ourselves much in advance of Russia in our standards of ethics, but here is a case where we may well learn a lesson from the subjects of the Czar. There has been far too much laxity in the way of copyright infringement. Many a manufacturer—and this is quite applicable to the rubber trade—has built up an enviable reputation through years of honorable achievement and given his trade-mark a great commercial value, only to have some not too scrupulous concern enter the field and deliberately adopt a trade-mark so similar as to make it inevitable that the trade, particularly the consuming trade, would confuse the two, the newcomer hoping in this way to reap what another has sown. A few months in jail for the directors of a company that seeks to embezzle the reputation of another company, would be a wholesome object lesson.

It may be added, however, that there has been a general improvement in regard to this matter in this country. Some years ago the manufacturer whose trade-mark rights were infringed could get very little redress in the courts. Judges are now disposed to treat these complaints more seriously, and in addition to this fact there is a constantly growing sense of business honor, that entirely apart from the legal aspects of the matter, tends to bring this form of dishonesty into increasing disrepute.



## A Visit to the "Black Republic."

By the Editor of "The India Rubber World."

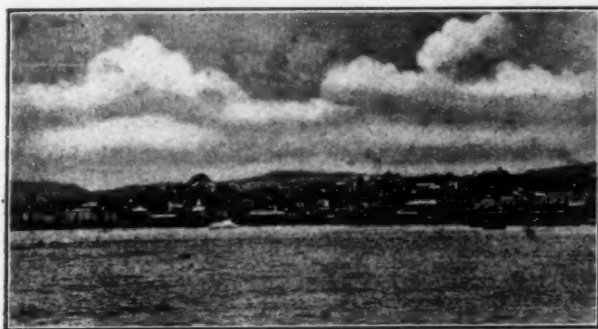
Haitian Rubber Trees—From Curacao to Jacmel—"The Second French Republic"—A Dangerous Roadstead—Ashore at Jacmel—The Post Office, Market and Jail—Upper Class Haitians—A Visit to Aux Cayes—A Wonderful Fire Department—Traveling Haitians—The Birthplace of Dumas.

TIME was when there were rubber trees in Haiti—Castilloas probably, although the early visitors, in 1492 and on, did not know the *Hevea* from the *Asclepias*. They simply mentioned the ball games of the native Indians, where were used very lively rubber balls of domestic manufacture.

The natives died off with the advent of the whites, and although coffee, cacao, and sugar cane were introduced, and grown at great profit, practically nothing was done in rubber. To be

would allow of visits ashore and even trips into the interior if one desired.

There was a Haitian aboard, who, as we neared his native land, waxed very voluble concerning his country's wealth and power. He spoke English well, although he claimed that he was



JACMEL WATERFRONT.

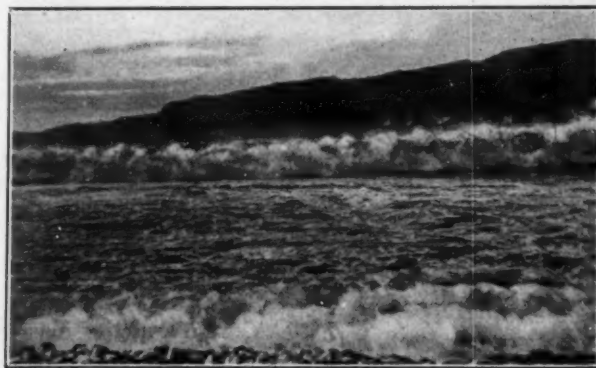
sure a short time before the historic "rubber craze" a Belgian company took up land, and started rubber planting, but did only a little and that in an intermittent way.

So it was not in search of gum elastic that I visited Haiti. I was on my way home from Venezuela, and by going to Curacao and taking a Dutch steamer I could visit Haiti, and see all that was worth while. The fact that American capital was back of some new railway construction, and that business houses in the United States were paying more attention to the trade of the Black Republic, and further that Secretary Knox of the State Department was even then on his way to Port au Prince for a



"THE GREAT RIVER," JACMEL.

formal visit, led me to believe that this beautiful and fertile island was on the eve of an awakening. A visit would therefore be timely, for who could tell what the future might hold in store in the way of prosperous Haitian rubber plantations. The steamer was scheduled to stop at some seven ports, and



DAUGHTER HAITIAN COAST.

French. He was a large, raw-boned negro, black as night, and rather surly. When he did talk, however, his conversation was interesting, to say the least.

"I am a soldier," he said, "an officer—a general. You will not see our army, but we have thousands of the bravest. No country in the world can conquer us. Did not Spain, England and



MARKET, JACMEL.

France try it? We drove them into the sea. We are French. The second French Republic. We planned our constitution and laws after those of your country, which we far excel, as you will see."

It was thus he talked as we entered the dangerous roadstead off Jacmel, and pattered round for an hour or more to find safe anchorage. The harbor bottom is very treacherous, and steamers anchor fore and aft, and keep up steam ready to slip out and into deep water at the least sign of a blow. After we

were safely located the pilot came off and climbed aboard. He knew nothing about ships, shipping, or harbors, but was a thoroughly capable collector of harbor fees. He took the passenger list ashore, to be examined by the proper authorities, and after an interval returned with the information that "passengers



PRIMITIVE SUGAR MILL.

would be permitted to land." Those who had visited the island before did not seem overjoyed; indeed, to a man they elected to stay on board. Some of us, however, chartered a row boat for a "Gourde" (30c.) each and started for the pier.

The little city, with its red roofed houses and its tropical setting, looked very pretty from the boat. So, too, the big flat-bottomed lighters, each propelled by three sturdy blacks standing side by side at the stern, sculling with twenty foot sweeps, were wonderfully picturesque. French were these boatmen, in their vivacity and wealth of gesticulation, but in appearance African. Some twenty of these lighters swept down upon our vessel, fighting for first place, crowding, casting off each other's moorings, jostling, swearing, threatening even to knife pulling, but never really coming to blows.

When we started the day was clear, but in a very few minutes heavy clouds appeared, and the mountain slopes were hidden by a brisk shower. We did not get it as the sea breeze, that blows all day long, sent it back to the land again, but that night, when the wind turned and the land breeze blew, everything was drenched with rain. As we neared the shore we passed close to the wrecks of several ships, that had been caught by a blow and driven in upon the rocky shore.

We landed at a tumble-down stone pier, littered with bales of goods, casks, old iron, rotting timber, and half-clad darkies.



THE ROADSTEAD, JACMEL.

A man in rainbow uniform escorted us to a shed, where a dozen officials with a copy of the passenger list checked off our names, and after warning us that the harbor was closed after six at night, allowed us to wander about the city. We first visited the

post office—a great bare room furnished with a table where letters were stamped and sealed, and a desk for the postmaster. It was only a detail, but some one had stolen the weights from the scales and small stones had been substituted. An oil stove was used for heating the wax and a pewter spoon for a seal, and our attention was called to both several times by proud citizens who were acting as guides and avidly accepting cigars, or indeed anything we could be induced to part with. We bought some stamps, saw the mail for Aux Cayes deposited in a meal bag and thrown in a corner for delivery in the distant future and departed.

The market came next. Through swarms of beggars, goats, swine and filth that overflowed the gutters and covered the narrow roadway, we waded to see the place where the city got its food. It was a great rambling building, in which half-clad negroes sold corn, beans, rice, flour by the cup, queer confections, stripped tobacco leaves, and sulphur matches. These last mentioned seemed to be on sale everywhere.

Then one of the Port officers turned up and claimed he had not seen my passport. That meant a cigar or a tip, so I gave him a Haitian dollar so torn and black and dirty that it hardly held together. But he was afraid of it and declined it; so we compromised on a nickel and a long black cigar.

On the crest of a hill in the middle of the town is the city prison. Its huge barred gate was fastened by a rusty padlock,



HAITIAN LIGHTERS.

the key to which was two feet long. The sentry, assisted by a muscular prisoner, unlocked the gate and admitted us for a consideration. The outer court was crowded with the most forlorn, tattered, yet cheerful wretches that I have ever seen. The inner prison, a big room with thick stone walls, was packed with men and women who crowded to the grated door and windows, begging, cursing and quarreling while the guards who kept no sort of order, jabbed at them with their antiquated muskets and cursed back constantly and vociferously. In a pit in one corner of the court yard were two crazy prisoners chained side by side. Everywhere was filth indescribable. It is hardly necessary to say that we did not tarry long in this bedlam.

Down the dirty, crowded streets with their high-sounding French names, we slipped and waded, and suddenly came upon the one wholesome spot in the city. It was a French Catholic school, run by the Sisters of Charity. Here the children were neat, clean, orderly and very bright. Here lies the hope of Haiti.

We were very glad to get back to the ship, bathe, fumigate and forget. And then we received another surprise. Off from the shore came a boat rowed smartly, and up the ladder came visitors for the captain—men dark, vivacious, elegant, and ladies

clad in Paris gowns. They were the upper-class Haitians, and would pass for wealthy and cultured French anywhere. But how they manage to exist in their filthy cities, even in suburban villas, and keep clean and well is a mystery.

We got away that night for Aux Cayes, and dropped anchor in the harbor the next morning. A crowd of port officials in a power boat run by kerosene, and adorned with a crooked stove pipe, from which poured clouds of black smoke, came alongside and boarded us. By advice of counsel we locked our cabins and kept them locked until the visitation was over. Thus we re-



TYPICAL HAITIANS.

tained our extra shoes, bath-ropes and toilet articles. When we had taken on some casks of honey, and were all ready to sail word came that passengers were expected, and in the long wait that ensued we explored the city.

It was different from Jacmel, and cleaner. More than one-half of it had burned down not long before, and that, in spite of



HAITIAN WASHERWOMEN.

the fire department, was the clean part. Few Haitian cities have risen to the civilized heights of fire departments. But Aux Cayes had, and it was O. K. Those gold helmets of the firemen!—a bit battered, to be sure, but how they shone! And the sentinel at the door of the firehouse, what a proud handsome figure he was! The equipment for fire fighting? Well, there was a French hand-engine that properly manned, could throw several gallons of water a minute fully twenty feet, that is, if they had

hose. But the gold helmets and the uniform! That was what the people were proud of! That was what they paid for, or at least owed for.

We met a traveled Haitian here, a man who had lived about nine years in France, and he showed us much that was interest-



VILLA OF WEALTHY HAITIAN.

ing. A bank in a fine building all its own, and a big department store run by Germans that was a marvel in the completeness of its equipment.

Back to the boat late in the afternoon we came, and found it crowded with passengers for Port au Prince. The captain predicted stormy weather, and wanted to get away. But the health officer had not brought our papers. For two hours the big whistle roared at minute intervals, and then gave it up. Finally four hours late they came—and they had been ready all day! Had we sailed without the papers it would have meant five days' quarantine at the next port, and that was what the officials desired.

I forgot to say that it was here in the opulent olden time of the French occupation that Alexander Dumas, Sr., was born.

I hope that I am not giving the impression that there is nothing good in Haiti, that it is a country of filth, tatters and degeneracy only. That is very far from the fact. The coast cities are awful, and the people—that is the lower class—ignorant and shiftless. But the country itself, as soon as one gets a little way inland, is wonderfully beautiful and of exceeding fertility. It is also healthful. Indeed, the cities themselves do not breed the pestilences that one would expect. With an incomparable climate, a rainfall often of over 100 inches, and many excellent



HAITIAN EXCURSIONISTS OF THE BETTER CLASS.

harbors, the time is sure to come when schools, churches and industries will have their effect, and the Black Republic under proper leadership will be sanitized, industrialized and saved.

(To be continued.)



### INTERNATIONAL ASSOCIATION FOR TESTING MATERIALS.

FROM September 2nd to 7th, the sessions of the Sixth Congress of the International Association for Testing Materials, were held at the Engineering Societies building, New York. They were attended by nearly 800 chemists, engineers of tests, privy councilors, railway directors, collegiate teachers, and directors of official testing stations.

In order to facilitate the work of the Congress, it was conducted in the following sections:

- (a) Metals and Metal Products.
- (b) Concrete and Building Materials.
- (c) Organic Materials.

Among the papers presented were five of particular interest to the rubber trade; two of them being of a general nature and three of a special character, as follows:

"Fundamental Principles for the Organization of the Public Testing of Materials," by Dr. A. Martens, director of Royal Testing Station, at Berlin, Gross-Lichterfelde.

"Some Apparatus for Tension Tests of Rubber," by P. L. Wormeley, physicist at the United States Bureau of Standards, Washington, D. C.

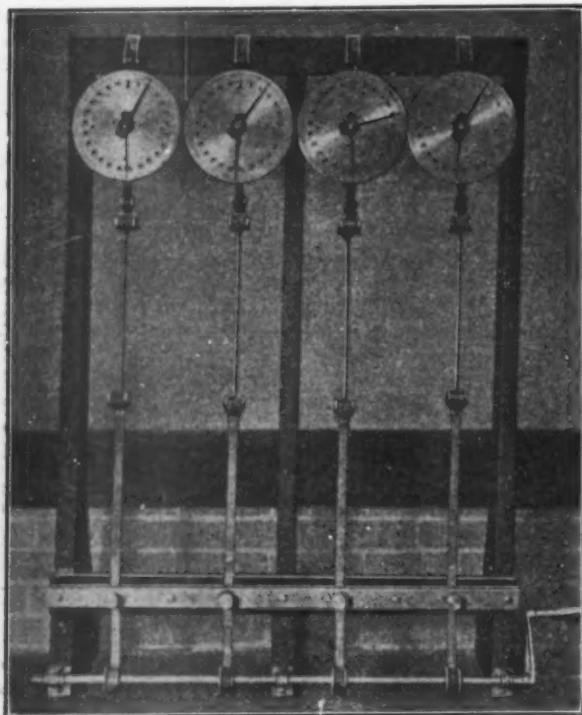
"Report on the Actual State of Rubber Analysis," by F. W. Hinrichsen, chemist at the Royal Testing Station at Berlin, Gross-Lichterfelde.

"The Present Status of the Mechanical Testing of India Rubber at the Royal Testing Station at Berlin, Gross-Lichterfelde," by Karl Memmler, engineer at the station.

"The Austrian Testing Station at Vienna," by Ernst Reitler, director of the bureau.

### RUBBER TESTING IN GERMANY AND AMERICA.

AN opportunity has recently been afforded rubber experts in this country, to become fully acquainted with the latest developments in rubber testing. Several papers were read at the



APPARATUS FOR STRETCHING RUBBER.

recent New York Congress of the International Association for Testing Materials, among which special interest attached to those of Professor Karl Memmler, of the Royal Testing Station, Berlin, Gross-Lichterfelde, and of Mr. P. L. Wormeley, of the United States Bureau of Standards, Washington, D. C.

Professor Memmler has long been engaged in the solution of the various problems affecting rubber testing, having in conjunction with Professor Schob, submitted a report to the Copenhagen Congress held 1909. Later, in collaboration with Professor Hinrichsen, he produced a work on "Rubber Testing," which brought the question up to the point it had reached in 1910.

While the subject aroused further interest, through the exhibition of apparatus at the laboratory's stand in the London Rubber Exhibition, the expected stimulus was not given to the mechanical testing of rubber. It was therefore, deemed advisable to lay the essence of the results newly obtained, before the present year's New York Congress of the association. These results were largely

in connection with the ring test, and differed materially according as stationary or traveling rings were employed. The methods of manufacture likewise affected the results, while the influence of the dimensions was noticeable in the results of tensile strength tests.

Although the field of experiment has been considerably widened since the Copenhagen Congress, it has not yet been found possible to bring forward definite and perfectly elaborated methods for the mechanical testing of soft rubber; owing to the peculiar physical and mechanical properties of this material, and its manifold technical uses. A committee of the German Association for Testing Materials is engaged on the points at issue.

THE INDIA RUBBER WORLD in the issues of October, 1911 (page 23); December, 1911 (page 107); January, 1912 (page 160), and May, 1912 (page 385-6), has reported upon the various features of the question, which has been advanced a stage by the results upon which Herr Memmler has reported, of the work of himself and his colleagues.



MACHINE FOR TESTING TENSILE STRENGTH OF RUBBER.

### TESTING APPARATUS.

With a view to facilitating and expediting the work of rubber testing, a number of machines have been developed by the United States Bureau of Standards. In Mr. Wormeley's paper, to which reference has been made, he has described two kinds of apparatus for stretching rubber, and two for testing tensile strength. Effective illustrations are annexed to the paper, which also, like Professor Memmler's, deals with the influence of the form of test specimens on the results of tension tests.

News has been received of the death from yellow fever on July 28 of F. E. Mellinger, of the Ermila plantation, Mexico. Mr. Weis, of Huamqueller, Mexico, died of the same disease on August 18.

THE accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.



## Eighth International Congress of Applied Chemistry.

THE Eighth International Congress of Applied Chemistry was held in New York from September 6 to 13th, under the presidency of William H. Nichols, Sc. D., LL. D. In the course of the proceedings, which took place in the Great Hall of the College of the City of New York, six lectures of general character were delivered by the following leaders of chemical thought from various countries:

England, Professor Perkin; Germany, Professor Bernthsen, Professor Duisberg; Italy, Professor Ciamician; France, Professor Bertrand; Norway, Professor Eyde.

The meetings of the 24 sections, into which the Congress was divided, were held at Columbia University. In the section devoted to rubber the following ten papers were read:

L. H. Baekeland, New York, "On Condensation Products of Phenols and Formaldehyde."

Paul Bary, Paris, "Application of Osmosis to the Deresination and the Reclaiming of Rubber."

C. Beadle and Henry P. Stevens, London, "Investigation into the Nature and Properties of *Hevea* Latex."

C. R. Boggs, Boston, "A Direct Determination of Rubber Applicable to Specifications on Vulcanized Rubber."

J. G. Fol. Delft, "On the Relationship Between the Amount of Resins and the Viscosity of Rubber Solutions."

Eduard Marckwald, Berlin, "Treatment of Rubber."

Clement and Riviere, Paris, "Researches on Cellulose Acetate."

B. Setlik and J. Zofka, Prague, "Analysis and Tests of Rubber-Coated Fabrics."

Lothar E. Weber, Boston, "The Action of Resins in the Vulcanizing of Rubber."

G. Stafford Whitby, "On Some Preliminary Observations Regarding the Causes of Natural Change in the Latex of *Hevea Brasiliensis*, and on the Depolymerization of Caoutchouc and its Conversion."

In the section for Coal-Tar Industry the following paper was presented:

W. H. Perkin, Manchester, "A Study of Syntheses in the Terpene Group."

### THE SYNTHESIS OF RUBBER.

AN INTERVIEW WITH DR. DUISBERG, MANAGING DIRECTOR OF THE BAYER COLOR WORKS, ELBERFELD, GERMANY.

FOLLOWING the notable lecture delivered by the famous German chemist, Dr. Duisberg, at the Congress of Applied Chemistry, he courteously accorded an interview to a representative of THE INDIA RUBBER WORLD, in which he expressed himself further regarding the highly successful results achieved in the celebrated works at Elberfeld over which he presides, in the solution of synthetic rubber.

"In presenting the case relative to synthetic rubber, we should not overlook the fact that William Tilden was the true discoverer of the new product, for he observed its presence in a bottle in his laboratory in 1892. This you will note was about ten years after he had completed his experiments. Unfortunately he omitted to note the exact physical and chemical conditions under which the synthetic rubber was formed, and was therefore unable to duplicate his experiments. At all events his method was not a commercial one.

"The results published by Dr. Fritz Hofmann, of Elberfeld, state the exact conditions under which the new material may be prepared. He made observations as to the time and temper-

ature required, and the concentration of the solutions needed for its proper preparation. Thus he was the first to describe a new and useful process for the preparation of synthetic rubber, and must therefore be regarded as the inventor of this process. In proof of his contention that his process is new and useful and technically possible, he has had rubber goods manufactured from the new material, and has applied tests to determine its commercial value.

"The production of synthetic rubber is one of the greatest successes, and yet it was one of the most difficult problems of the chemical industry. I am proud of the fact that its production was successfully accomplished in the works at Elberfeld, and that I was able to follow every stage of this important discovery. Perhaps you would be interested to hear how the whole thing happened, especially as much that is misleading has appeared in the press.

"Caoutchouc made from the milky sap of numerous species of trees and shrubs and the grotesquely formed lianas by various coagulation processes, on being suitably treated with sulphur or sulphur compounds, *i. e.*, by vulcanization, acquires its valuable and characteristic properties. The synthetic method took quite a different route. The very complex molecule which rubber doubtless possesses was broken up by heat, *i. e.*, by dry distillation, into a maze of all kinds of gases, oils and resins. A colorless fluid resembling benzine, to which the investigators gave the name "Isoprene," was also obtained. Bouchardat, in France, first expressed the belief that this isoprene, obtained in very small quantities, and in an impure form by the dry distillation of caoutchouc, might be closely and intimately related to caoutchouc itself. As far back as the eighties, the Englishman Tilden claimed to have prepared artificial rubber from isoprene by treatment with hydrochloric acid. Tilden, though he worked strenuously for years, did not succeed in repeating the experiments. Other investigators were likewise unable to confirm the results. Dr. Fritz Hofmann, of Elberfeld, in 1909 succeeded in polymerizing the isoprene molecules into the complex rubber molecule. Somewhat later Harries\* discovered independently another method of arriving at the same result. Everyone is now in a position to repeat this exceedingly simple experiment himself, but in order to obtain Hofmann's results, it is necessary to employ pure isoprene.

"The practical value of this rubber, of which many samples have been made, has been tested by the highest authorities in this branch of the industry, whilst Harries, whose labors extending over many years, prepared the soil for Hofmann's synthesis, has carefully examined the chemical constitution of the substance.

"The matter appears very simple, intelligible and clear, but the difficulties which have been overcome were great indeed, and those which still remain to be surmounted, in order to produce a substance equal to Par  rubber in quality and capable of competing with cheap plantation rubber costing only 25 cents per lb., are still greater. The end in view is this: that artificial rubber may soon play as important a role in the markets of the world as does natural rubber.

"I have employed articles made of synthetic rubber, and for some time have used automobile tires made of this material. Yet, if you ask me to answer you honestly and truly when synthetic rubber will bring the millions which prophets see in its exploitation, I must reply that *I do not know*. Surely not in the immediate future, although synthetic rubber will certainly appear on the market in a very short time."

\*See article on Synthetic Rubber in Germany, on page 11 of this issue.

## DR. PERKIN ON THE SYNTHESIS OF RUBBER.

ONE of the noteworthy features of the Congress of Applied Chemistry, just held in New York City was a lecture by Dr. William H. Perkin, Professor of Chemistry at Victoria University, Manchester, on his researches in the field of rubber. It will, therefore, be of interest to note some comments which he made on this subject in the course of a subsequent conversation with Dr. Frederic Dannerth, secretary of the Rubber Conference. Dr. Perkin's remarks are interesting, as they lack all flavor of resentment at the attacks of his critics.

"Dr. Duisberg," he began, "has prepared at the factory in Elberfeld synthetic rubber on a considerable scale, and has supplied some very valuable information concerning its physical properties. It was shown in his lecture that automobile tires made up from synthetic rubber outlasted similar tires made with the best Up-River fine Pará. I heartily agree with Dr. Duisberg in this assertion, and fully appreciate the fact that an auto tire which has been run over 10,000 miles and shows so little wear as the tire exhibited by Dr. Duisberg is worthy of serious attention. I think many will agree with the doctor from Elberfeld that cheap synthetic rubber will be put on the market at a price which will enable it to compete with plantation rubber possessing the same properties.

"In the years 1883 and 1884 William Tilden, then professor at Mason College, Birmingham, England, prepared large quantities of isoprene from turpentine. Some of this he used for his experiments on isoprene at that time, and the remainder he either bottled up or sealed up in tubes which were set aside.

"On looking at these specimens in the year 1892 he found—to his great astonishment—that this isoprene had become polymerized to a rubber-like substance which we now know as 'synthetic' rubber. The specimens exhibited by me in my lecture were the original products prepared by Tilden, and those undoubtedly contained synthetic rubber. This is proved by the fact that by mixing the specimens with acetone true synthetic rubber is precipitated. We must not forget that Tilden worked under conditions far less favorable than those which face us at the present day. So that we should not wonder at the fact that some of his methods were less refined than those at present used in research work in this field.

"In answering your question as to a definition for synthetic rubber I would suggest: 'Isoprene, polymerized to a rubber-like substance.' Since Tilden, in 1892, had polymerized isoprene to a rubber-like substance, which he proved was capable of vulcanization, it is obvious that he had synthetic rubber in his hands in 1892. This you will note was seventeen years before Hofmann published the results which he obtained in the Elberfeld factory.

"An attempt has been made to underrate these observations made by Tilden on the basis of the difference between discovery and invention. In this connection it is interesting to note the attitude of Professor Bernthsen of the Badische Fabrik in Ludwigshafen, Germany. He says, 'If there is any difference between the invention and the discovery of synthetic rubber it is obviously a small one, and in discussing a matter of this importance Dr. Duisberg will no doubt wish to avoid any misinterpretation of his remarks. The factory in Ludwigshafen is not at this time desirous of publishing its results.'

Continuing his comments, Dr. Perkin further said: "I viewed with considerable interest the wonderful specimens of manufactured rubber goods made from synthetic rubber. First, the tire which had been subjected to the practical road test of 10,000 miles, and a new tire recently vulcanized. In addition to these exhibits we certainly all admired the hemisphere of raw synthetic rubber of unusual density and translucency. This hemisphere was said to weigh about 60 pounds, and was made from isoprene by the sodium polymerization method. Isoprene, as most of us know, boils at 37 degrees Centigrade, so that it is

rather difficult to transport it or keep specimens of this material in other than sealed containers.

"From all present indications a refinement of the present methods of working will make the ultimate price of synthetic rubber so low that it will compete with the plantation rubber having similar properties. We should be careful, however, not to be too sanguine and by our prophecies make possible a manipulation of the stock market in either direction. I note that previous remarks on the possibility of synthetic rubber have awakened in the fertile minds of stock market manipulators thoughts which no scientist ever had.

"There is one fundamental discovery connected with the Manchester method for the production of synthetic rubber. It is the observation by Professor Fernbach of the Pasteur Institute of Paris that it is possible to ferment starch—or even sawdust, in such a way as to obtain large yields of butyl alcohol and acetone at prices far below the present market on these materials. Of the three methods described for the synthesis of rubber which I described in my London lecture, there is one which appears to be of direct commercial importance. Briefly summarized it is as follows: (1) Take ethyl alcohol, which may be easily oxidized to acetaldehyde. (2) Condense this by means of potassium carbonate to aldol. (3) Convert the aldol (quantitatively) into butylene glycol. (4) Convert the butylene glycol into di-chloride. (5) Then pass this over soda lime and produce butadiene. (6) This when treated by the sodium method, yields a synthetic rubber equal—if not superior—to that obtained from isoprene. The work which has been accomplished at Manchester by me may be summed up by saying that a rapid and satisfactory method of polymerizing isoprene into normal rubber of five carbon atoms has been found. The problem of producing isoprene cheaply has not yet been solved."

## A BRAZILIAN VIEW OF ARTIFICIAL RUBBER.

IN discussing the subject of artificial rubber in a recent issue, the "Folha del Norte" of Pará, remarks that the ideal pursued by modern chemistry, is to replace syntheses—derived from natural products, by laboratory syntheses, identical in quality with the original articles.

At various times, the journal remarks, it has been announced to the world that the synthesis of rubber was an accomplished fact. In all cases the result has been purely theoretical, or has led up to the question as to what would be the expense involved by carrying out the process on a large scale. Reference is made to the interest aroused in July, 1911, by the announcement that the firm of F. Bayer & Co., the well-known manufacturing chemists, expected to be successful in the work of producing synthetic rubber, to which it had long been devoted.

The importance of this statement was generally recognized; it being a well known fact that German chemical manufacturers regarded the production of the first pound of synthetic rubber as the point to be aimed at. The cost of making tons of it would have to be the subject of further investigation.

While recognizing the injury which the production of a perfect substitute for rubber would do to the natural article, it is urged that such a disaster would never extinguish the Brazilian rubber industry. Reference is made to the opinions expressed by chemists of eminence, to the effect that no artificial product can ever be substituted for Pará rubber; the former being lacking in the necessary qualities of resistance, elasticity, and homogeneous composition.

While this article was apparently written before the public announcement of the Perkin process, it is none the less interesting as showing how the question of synthetic rubber is regarded by the South American rubber industry.

Should be on every rubber man's desk—The Rubber Trade Directory of The World, 1912.

## Synthetic Rubber in Germany.

IN the early part of this summer, the question of synthetic rubber was dealt with at the Freiburg Congress of the Association of German Chemists, by two of the most noted authorities on the subject. Dr. Carl Harries, of Kiel, and Dr. Fritz Hofmann, of Elberfeld, respectively treated the matter from a scientific and a technical standpoint.

Dr. Harries, in amplification of his previous utterances on the subject at Dantzig, recalled the fact that the basic material for the production of synthetic rubber is isoprene, a relatively simple carbo-hydrate, belonging to the butadiene order, and which has been obtained from the dipentene in turpentine. He regarded the problem of the cheap production of isoprene as having now been solved, as well as that of butadiene or erythrene.

The influence of alkaline metals on butadiene was discovered by Dr. Harries in the summer of 1910. According to his experiments, by enclosing butadiene in a tube with sodium wire, the butadiene after several hours completely disappeared; a substance resembling rubber adhering to the wire. He also found that isoprene was much more easily changed into rubber by sodium, than by mere heating. Regarding the substance thus obtained, Dr. Harries, however, remarked:

"These so-called 'sodium rubbers,' although physically acting quite like rubber (for instance, permitting of vulcanization) are not identical with other products, which correspond with natural rubbers."

### WHAT IS MEANT BY ACTUAL RUBBER.

In dealing with this question, Dr. Harries takes the position that the isoprene product must, like natural rubber, have tough and elastic properties, must be soluble (neither too slowly nor too easily) in freshly prepared ether, benzole or chloroform; and must, when kept for a certain time, gradually become hard to dissolve. He adds that from the above comparison of natural rubber with synthetic rubber from isoprene, he has come to the conclusion that both are in a chemical sense identical; the products of the polymerization of the same basic carbo-hydrate (dimethylcyclooctadiene). Which exact isoprene formula corresponds most closely with natural rubber, is, he remarks, still an open question; but he leaves aside for the present the consideration of sodium rubbers, there being still uncertainty as to their composition, and their not being identical with other products, admittedly corresponding with the natural substance.

### FUTURE OF SYNTHETIC RUBBER.

Dr. Harries remarks in conclusion:

"A wide field of chemical investigation is still offered here . . . which may in the future be developed in the same way as the chemistry of dye-stuffs. For every special purpose, its particular synthetic rubber will be manufactured. . . ."

"While the country has been viewing with anxiety the gradual usurpation of German possessions by foreign nations, industrial chemists have been quietly carrying out developments, which will compensate our Fatherland, by rendering possible the domestic manufacture of one of our most important colonial raw materials."

### TECHNICAL ASPECTS OF SYNTHETIC RUBBER.

The paper read by Dr. Fritz Hofmann dealt with the technical aspect of the question of synthetic rubber; his position as Director of the Laboratory of the "Farbenfabriken" of Elberfeld (which establishment has occupied a leading position in the recent investigations and experiments), naturally limiting his statements to facts of a more or less generally known character.

In the first place, he dealt with the powerful elements at work in developing the yield of Malayan rubber.

Against these powerful forces, there has been arrayed a small band of chemical experts. When the work of these pioneers

commenced, there was but little prospect of a successful issue. While the possibility of transforming isoprene into rubber by polymerization, was referred to in technical literature, its advocates had grown discouraged. Even Tilden gave up working upon the subject, failing to see the prospect of a successful result. Individuals being thus unequal to the task, it had to be taken up by large chemical establishments, which besides abundant capital, had the necessary staff of expert chemists. As many as 300 are with the "Farbenfabriken" of Elberfeld, to the director general of which (Privy Councillor Duisberg) Dr. Hofmann paid a warm tribute of appreciation. Without the encouragement of his example, the apostles of synthetic rubber must long ago have had to give up the contest.

### DR. HOFMANN'S RESEARCHES.

Dr. Hofmann's attention had been drawn to the subject about six years ago, through reading a paper by Professor Dunstan of London. As he discovered by the literature on the subject, that isoprene was a constituent of synthetic rubber, he perceived that in order to make any progress it would be necessary to obtain isoprene itself by synthesis, rather than, following the method hitherto in vogue, to obtain it by the dry distillation of rubber. This latter form of producing isoprene had been experimentally employed nearly a quarter of a century ago by Kondakow, but the quantity was too small to be of service. Hence the necessity which Dr. Hofmann found of producing isoprene on a large scale, in the highest degree of purity. The fulfillment of this apparently simple requirement was, however, attended with much difficulty. After two years' experimenting the right path was found. As a basic material he had chosen coal, which in this respect did not disappoint the expectations to which it had given rise. Dr. Hofmann exhibited samples of the intermediate products between coal and rubber, with a table showing the sequence of the reactions of his process. Acting on the principles thus enumerated, Herr Coutelle, one of his colleagues, succeeded in March, 1909 in producing several quarts of pure synthetic isoprene. The "Farbenfabriken" thus had at its disposal the desired process; the technical practicability of which was no longer to be doubted. This process, Dr. Hofmann added, rested upon a strictly scientific foundation; he and his colleagues having been convinced from the start, that only such a basis for their work merited consideration.

### ACTION OF HEAT UPON ISOPRENE.

Although isoprene had thus been produced, the troubles of the experts engaged in its production were not over. The first question was: Out of this liquid resembling benzine, to form a tough, elastic and "nervy" colloid, resisting all the influences to which it would normally be subjected. A trial of muriatic acid for this purpose only resulted in an oily chloride, but no trace of rubber. Another experiment was with light, in accordance with the statement of Wallach, that it would change isoprene into a substance resembling rubber. However, after patiently waiting eighteen months the only result was that the contents of the bottle had assumed the consistency of a thin solution of sugar. Under these circumstances all possible (and impossible) physical and chemical agents were let loose on the isoprene, but it would not thicken.

Finally, Dr. Hofmann found in heat the power necessary for producing the desired result. There was nothing new in heating isoprene, but the result was new. It was also found that the polymerizing effects of heat were promoted by certain chemical additions.

### SYNTHETIC RUBBER PRODUCED.

The first rubber produced by polymerization was obtained in August, 1909, in the laboratory of the Elberfeld "Farbenfabriken,"



under the direction of Dr. Hofmann. In September, 1909, Dr. Hofmann submitted the new material to Dr. Gerlach, director of the Continental Caoutchouc and Gutta Percha Company, of Hanover, who was the first to confirm the fact that the product was really rubber.

#### COMPETITION WITH PLANTATION RUBBER.

While further experiments were in progress, with a view to perfecting the successful method, the advance in rubber prices of the spring of 1910 took place. As Dr. Hofmann remarked, had the high prices of that time been maintained, the manufacture of synthetic rubber on an extensive and highly profitable commercial scale would have been ensured. He added that when the prospective increased supply from Malaya becomes an accomplished fact, prices will doubtless fall to one-half their present level. Thus, it is remarked, the producer of synthetic rubber must so lay his plans, that his product may compete in price and quality with natural rubber. While diligent efforts are being made with that end in view, progress is only at a snail's pace. Good things cannot be forced. The best reaction must be found; the determination of which is necessary before rational work is possible.

With reference to Malayan production Dr. Hofmann remarked:

"The bulk of the Eastern rubber plantations have not yet reached the productive stage. But in a few years this situation will have entirely changed. What is to be expected from Asiatic plantations, in what quantity and quality, is illustrated by samples of the rubber from that quarter, and still more, by the balance sheets of the few older companies, which already show the full utilization of their plantations."

#### SYNTHETIC RUBBER IN THE WORLD'S MARKETS.

Dr. Hofmann remarked, in conclusion:

"Give us the 36 years the plantations have been at work, and I think synthetic rubber will occupy an equal position with natural rubber in the world's markets. . . . The further development of serious work as to synthetic rubber should be as quiet as possible, without beating of drums, or alarming newspaper articles. The samples exhibited here show that we have progressed to a certain point, but we have really no cause for claiming anything remarkable."

#### FUSEL OIL AS BASIS OF SYNTHETIC RUBBER.

##### GERMAN CRITICISM OF PROFESSOR PERKIN'S SYNTHETIC PROCESS.

AS was naturally to be expected, in view of the strenuous rivalry that has existed during the last three years between the English group of scientists and the German group of chemists, in their pursuit of a practicable and economical process of making synthetic rubber, the German chemists have not been slow to discover flaws in the English synthetic process, recently set forth by Professor Perkin, of Manchester, in his famous address of June 17.

Entirely apart from the lack of success which has so far attended the financial flotation of the English synthetic rubber enterprise, a number of German writers have found much to discuss in regard to the scientific aspects of this new English solution of the old synthetic problem.

The "Gummi-Zeitung" urges the necessity of devoting attention to the scientific and technical aspects of the question. Reference is made to a statement that in order to produce 10,000 tons of synthetic rubber by the fusel oil process, it would be necessary to plant 1,000,000 acres in potatoes to supply the necessary quantity of starch.

In discussing the subject a leading German authority on fermentation remarks that:

Professor Fernbach, of the Pasteur Institute, Paris, would seem to have discovered a micro-organism which yields large quantities of normal butyl-alcohol from starch or its derivatives,

such as grape-sugar. Such bacteria had already been discovered at an earlier date, for instance, by Pereire and Guignard in the Paris water supply. But, perhaps, it is suggested, the Fernbach microbe is in a position to produce a larger yield.

This *n*-butyl-alcohol is evidently the "fusel oil" of the prospectus, which is qualified as an unsuitable and unscientific designation. Real fusel oil contains isobutyl-alcohol in the proportion of 10-24 per cent., and *not* normal butyl-alcohol.

It is regarded as completely excluded from consideration that any amyl-alcohol can be produced from starch by bacteria, a supposition to that effect having been disproved by Ehrlich. Of course it would be of technical importance for the synthesis of rubber if a higher yield actually resulted from the Fernbach process. This point, it is remarked, is not clear from the prospectus, and is considered doubtful.

Fernbach claims that under certain circumstances over 42 per cent. of the starch used in the compound is changed into a high-grade alcohol. Of this proportion about two-thirds is butyl-alcohol.

On the above basis it is calculated that out of 100 per cent. starch there would be approximately only 30 per cent. of butyl-alcohol. This, it is added, would be a very small result; the question arising: What is to become of the rest of the starch? On this depends the technical utilization of the process.

#### WHAT IS HIGH-GRADE ALCOHOL?

This question arises in connection with the preceding estimate. In the opinion of the fermentation expert, whose views have been quoted, these terms seem to conceal the facts. To use his words:

"The chemical and general public are apparently to be made to think that the valuable higher homologues of alcohol are meant, and in the first place, amyl-alcohols! Such is, however, not the case. Were it so, the authors of the prospectus would certainly have underlined the word 'amyl-alcohol' a hundred times."

As amyl-alcohol is much more valuable than butyl-alcohol for the production of isoprene, surprise is expressed at the absence of mention of the former in the prospectus. From this fact the evident conclusion is that the so-called "high-grade alcohol" is nothing more than ordinary concentrated alcohol, probably the chief product of the starch germs or bacteria, while the butyl-alcohol is probably a kind of sub-product obtained in much smaller quantity. Butyl-alcohol further produces butyric acid.

Whether the quantity of ethyl-alcohol obtained in addition to the butyl-alcohol will make the process very lucrative is doubted.

#### PRODUCTION OF ACETONE.

On this subject it is remarked:

"This substance has hitherto not been found to result from any process of fermentation. Fernbach's work in this direction must be questioned, until exact scientific proof has been adduced. Acetic acid, it will be remembered, is a sub-product of the decomposition of starch. The authors of the prospectus may have thought to utilize this acid in the form of acetone, through transformation into lime salt and distillation."

In conclusion, doubts are expressed as to how any one could figure out a profit from the whole process.

Commenting upon the above statement, Dr. Frank, of Berlin, adds:

"These expert opinions coincide in all points with those of Dr. Marckwald and myself on the matter. The fundamental point is, and remains, that there are no real technical results nor products. Moreover, as far as can be seen, it is not amyl-alcohol (thus a basis for isoprene), but butyl-alcohol (the basis of butadiene), that is formed. The rubber from the latter has so far not proved satisfactory in anything."

"The only patents which present actual prospects are probably those based on the utilization of petroleum products, and of the gases resulting from coal-tar distillation."



## India Rubber in the Navy.

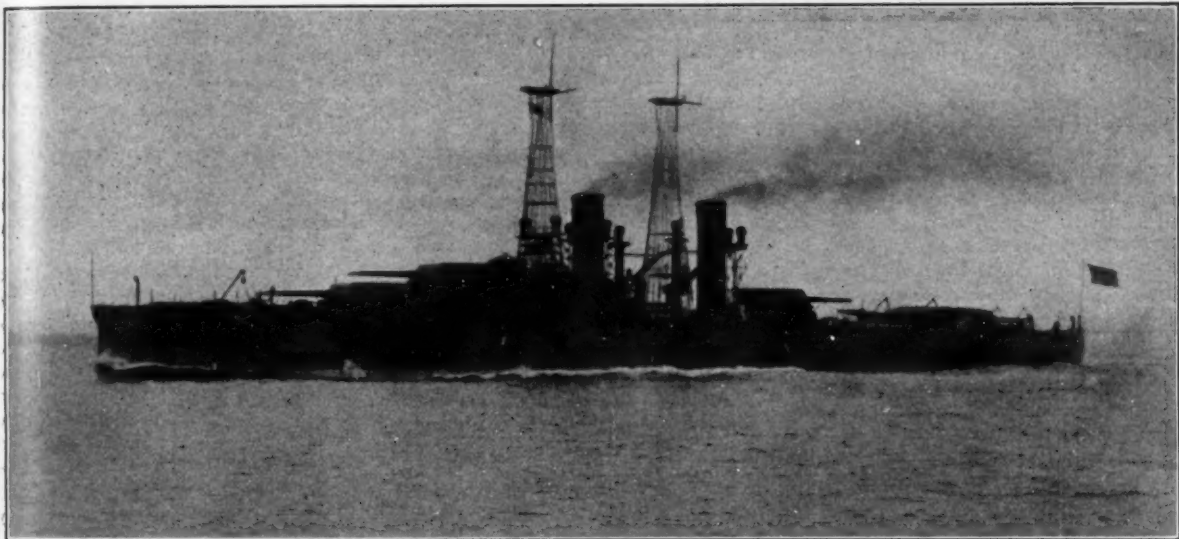
THE manufacturers of rubber wares may take both a patriotic and a business interest in the battle line of our navy.

While none of our war craft are arrayed in india-rubber armor, as has been seriously proposed in years past and, in a way tested, still there are plenty of ways in which this material fits into the workings of our fighting ships and makes them the better able to give and to take the blows of modern ordnance.

Our dreadnoughts and our super-dreadnoughts are virtually compact towns of substantially a thousand busy artisans and supervising officials. Apart from this, these vessels are mobile forts of high speed and exacting requirements, calling for continual expert care to keep them in the state of high efficiency now demanded by the present-day standards. Below and back of their rigid walls of gray-painted steel lie hundreds of mechanisms and auxiliaries of varying power, and this busy community of a thousand persons has plenty to do daily in making repairs and in keeping each of these fighters in trim to defend at brief notice

rubber seatings which effectually prevent the water in one flooded compartment gaining admission to the flanking neighboring one. In addition to this, there are hatchways and manholes in some of these sub-divisions which must likewise be made secure against either the admission or the egress of water, and, again, india-rubber gaskets or collars make this end certain. Under some conditions, both the air and the sunshine are free to enter through skylights and airports, but there are days when either the weather or the state of the sea make it necessary to close these openings securely, and once more rubber seatings make this possible. Water is not welcome inside of a fighting ship when it comes aboard through accidental openings, because while it may do no present damage, it may be the means of working insidious harm. Sturdy as steel is, still rust is its ever threatening foe, and moisture has a way of eating into the vitals of a plate and sapping its strength.

A man-of-war is subject to sudden and tremendous strains when her guns are fired, and no part of the supporting structure



ONE OF OUR LATEST DREADNOUGHTS, THE "NORTH DAKOTA."

the dignity of the Stars and Stripes. A modern battleship typifies the national state of pretty nearly every science and every contributive art. She is not only a fighting machine, with her burden of powder and shot and shell to make her fearful to the foe in the hour of strife, but she is the comfortable and the healthful home of her caretakers—the men who stand ready to make her guns do more than roar defiance and who are willing to lay down their lives in that service if the occasion requires. The keynote of all discipline and every act is EFFICIENCY, and in no community of a similar size ashore, or even in any factory, are the requirements of the personnel so exacting or generally so high.

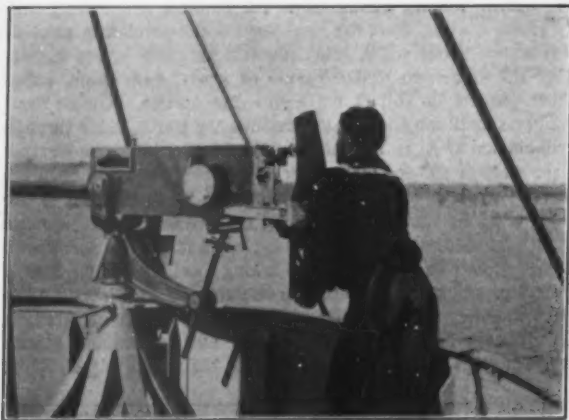
Let us see something of the part that india-rubber contributes toward the attainment of these splendid results. To begin with, the internal spacing below the armor belt is sub-divided into numerous water-tight compartments—some of them isolated and many of them intercommunicating. To make a passageway possible through the water-tight bulkheads, sliding and swinging doors are provided which, when closed, are also water-tight, and to make this certain the steel panels are jammed tight against

must be weakened by oxidation. Hence rubber plays an all-important part in keeping out water where it may otherwise find access to hidden places and do harm. There are many hundreds of pounds of sheet rubber employed for this purpose alone aboard each modern battleship, and the exigencies of this service call for fairly frequent renewals.

This, however, is not the only strictly structural direction in which rubber has a mission aboard our battle fleet. In the bathrooms and the toilets of the officers, rubber tiling is laid; at the top and at the bottom of ladders and gangways there are non-slipping treads to give added steadiness to officers and men hurrying up and down between decks and over exposed places in bad weather and when the sea is running high. Rubber treads are also placed in the working places and on the floors of the turrets, so that the gun crews may have a firm footing in their exacting tasks.

But rubber has a still more refined and, we may say, important use in connection with the expert handling of the fighting ship's guns. The modern battle practice requires the gun pointers to keep the muzzle of the weapon continually bearing

upon the target, and that they may do this they are provided with telescopic sights against which one eye of each pointer is pressed during the active working of the rifle. Despite the utmost effort to reduce shock and vibration, when firing, still these telescopes are forcibly jarred by each discharge and the attendant recoil.



RAPID-FIRE GUN, SHOWING RUBBER CUSHION ON SHOULDER PIECE.

To protect the gun pointer's eye from injury, a soft rubber cup is fitted to the telescope, and against this his brow and cheek bone rest in action. But for this cushioning it would be dangerous if not impossible for him to hold to his work for any length of time. On more than one occasion this rubber cup has become detached in the heat of rival target practice, and the gun pointers have stuck to their task even though the harsh eye piece of the telescope cut to the bone upon their brows and cheeks. It is easy to see how important is the role that rubber plays in the fighting perfection of our modern dreadnoughts and, in fact, all of our battle fleet.

The bulkhead doors in a battleship—even those above the water line—are of steel and are heavy, and in a rolling sea they are hard to control unless one be sure upon one's feet; therefore rubber treads are placed on the deck each side of the door to give the passer a better hold.

Deep down in the bowels of the ship where the engines have their place safe from the reach of an enemy's shot and shell, and throughout the branching leads of the steam pipes from the boilers, india-rubber has many fields of usefulness. The layman must not forget that coal and fresh water on a fighting ship are at a higher premium than they are ashore, and every effort is made to conserve these factors, vital not only to the mobility,

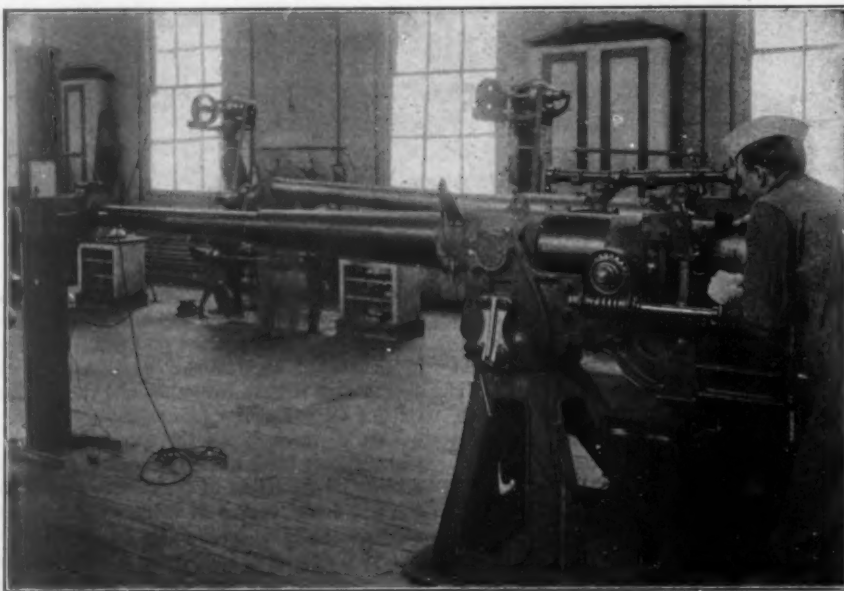
but to the very life of a man-of-war. In factories and commonly ashore, exhaust steam is freely vented into the surrounding air, and a leaking stuffing box or a dripping joint in a steam pipe is of but little concern. For the factory both coal and water in plenty are generally near at hand and refinements of economy are not essential.

In the navy, however, on the other hand, things are quite to the contrary—escaping steam means energy wasted and a loss of so much coal and fresh water. To make up for this dissipated heat and moisture, coal must be burned in order to distil fresh water from the sea, and an actual monetary prize is now offered to the engineering force for all savings in the consumption of fresh water and coal. One very important means to this end is seeing that all sliding parts are steam-tight and that no leaky joints in either the feed or exhaust systems shall permit the escape either of precious water or still more precious steam with its charge of heat. Rubber packing finds, therefore, valuable employment in pistons, valve stems, stuffing-boxes and pipe joints in every direction, and only the best products of this description are acceptable for this service in the navy. Steam pipes are led everywhere throughout the organism of a modern battleship, and manifold auxiliaries with their moving parts demand the use of rubber packing in one form or another. Nothing else has yet been found capable of assuring the same degree of efficiency.

But steam is not the only source of power aboard ship, even though it is the fundamental fountain of energy. Compressed air is used for various purposes, such as supplying the motive force for the dreaded automobile torpedo, for blowing the smoke and the burning fragments of powder bags out of the big guns, and for refrigerating service in the various cold storage compartments. Compressed air has a very penetrative habit, and only good joints will keep it within proper confines. Here, again, india-rubber helps out.

But the type of energy which best indicates the remarkable up-to-dateness of the modern fighting ship is electricity in its wonderfully varied applications and uses in the fleet. There is

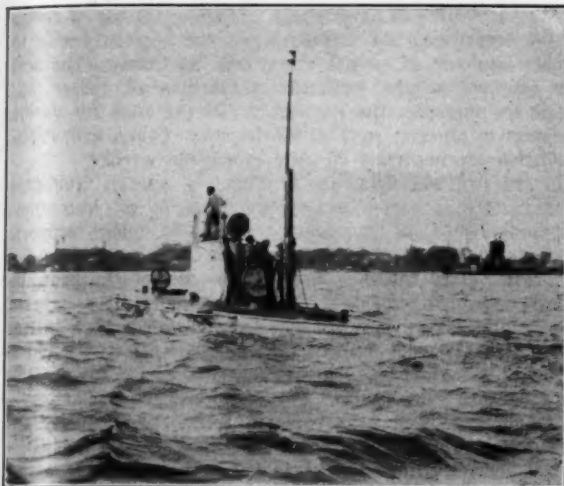
no other single structure in the world—not even excepting the best-equipped technical institute that has electricity in daily employment in as many ways as one will find aboard our dreadnoughts, and even upon craft of lesser military might. Electric auxiliaries do quite 90 per cent. of the work that used to be done by the brawny sailorman of years ago, and do it far better; and in addition do many other



RUBBER EYE GUARD ON TELESCOPIC SIGHT.

things which are quite beyond either manual power or human agency. Electric wires spread from keel to truck and from end to end of a man-of-war like a veritable network of sentient nerves, carrying energy and speeding directive messages of many kinds. Powder and shot are trolled

from their storage places and carried up to the breeches of the waiting guns and rammed home in the bores by electric power. The turrets are turned and the guns elevated and depressed by electric motors. Electricity runs the great cranes that raise the boats from their resting places and lower them over the sides



A SUBMARINE IN SURFACE TRIM.

The Three Circular Hatch Covers—Two Light and One Dark—Show Where Rubber Gaskets Are Absolutely Necessary to the Safety of the Boat Submerged.

into the water. Electric winches do a manifold service in helping to coal ship and load the stores aboard. Electricity provides the energy for the arc lights in the firerooms and engine-rooms, and the many hundreds of incandescent lamps both inside and outside of our men-of-war. Masthead lights, the running lights and the red and white Ardois signals that flash out their messages from ship to ship when darkness falls are all electric. So, too, are the powerfully inquisitive searchlights and the decorative strings of glow lamps with which the naval ship is dressed upon occasions of festivity.

But these are not the only ways in which electricity serves a valuable end in the fleet. There are dozens upon dozens of call-bells, buzzers, gongs, etc., which facilitate exchange of signals and which tell of the presence of hidden fire and unwelcome water, and announce just where these troublesome elements have appeared. Battle ranges are transmitted from the masthead stations to every fighting position below among the guns; orders and signals are exchanged between the fire and engine-rooms and the bridge, as well as from the commanding officer's fighting station and every important division of the throbbing craft below him. There are electrical revolution indicators, indicators showing the angle of the rudder, the heel of the ship, the action of the turret hoists, and a log which registers the speed of the vessel—also electrically controlled. But these means of communication and information are not all—one of our big battleships has an installation of something like sixty telephones. Some of these are in positions which require that they shall be watertight. In this widespread use of electricity and the many, many miles of connecting wires and cables, rubber is the prime insulating material, and rubber also serves the further end of insuring water-tightness in some of these fields of service.

Where hard rubber is used in connection either with construction or installations, the Government requires a very high insulating property, and the material must be capable of standing a live steam test for one hour without changing shape or form. We must recognize that insulation aboard a man-of-war is a far more serious problem in its relation to the life of the craft than upon a merchant vessel. Quite apart from the dangers of

electrolysis, a grounded current may lead to a short circuit in the neighborhood of a magazine, and it requires no imagination to picture the dire consequences of such a misfortune. It is to guard against this, as well as the consequences of a bursting steampipe or the flames of battle, that the Government is so exacting in its specifications. Thus we see how india-rubber not only contributes to electrical efficiency, but how it also safeguards the fighting ship.

Down in the sick-bay of our dreadnoughts we have a miniature duplicate of a modern hospital and its associate clinic. Here we find rubber in the various forms which the surgeon and the physician demand in their day's work as well as for the uses to which the nurse also puts it in the treatment of his patients. It would merely mean the recital of a long list to cover rubber in its different forms as here employed. The dispensary of a battleship is virtually a drug store on a small scale, and we must leave to the imagination of the reader what this means so far as india-rubber is concerned.

There are two things on a fighting ship which no commanding officer can look upon with equanimity—these are fire and dirt. That the decks may be kept clean, there are hundreds of feet of hose, and at numerous places throughout the craft there are other coils hung ready to quench a conflagration. But these are not the only ways in which rubber hosing is employed on shipboard. Every fighting craft has one or more suits of rubber diving dress and its associate air lines. The work cut out for the divers calls for their service in examining the vessel's bottom, stopping leaks from without and examining the propellers and other under-water fittings as well as searching for lost



NAVY DIVER PREPARING FOR UNDER-WATER WORK.

anchors and torpedoes. The Government will accept nothing but the best in the equipment of these rubber suits.

For the comfort of the sailor and the deck officers, there are rubber boots and rubber rain clothes; and when the weather is



summer-like and fair the officers wear canvas shoes with rubber soles. That the chairs and portable furniture may not slide threateningly when the ships roll in a heavy seaway, rubber castors are provided to help hold them in place. Rubber bumpers or stops either hold or check the force of a swinging door, and in dozens of other directions rubber in one form or another serves some useful purpose with which we have daily counterparts in our own domestic life ashore.

On board of a submarine, rubber has not the same manifold uses that it has upon a battleship, but where it is employed it is very much needed and must generally be of the best of its kind and form. Bad as the aftermath of a leak may be upon a surface ship of war, its menace is far more serious within a submarine. Not only must all valves be tight, but the hatches which form the passageways in and out of the submarine must certainly be secure against the admission of the sea when the boat is running submerged. Salt water in the storage batteries means the evolution of a poisonous gas—a gas which is capable of quickly overcoming and killing a submarine's crew. As boats of this sort are driven electrically when running under water, this part of their equipment is a large and important one. Rubber is employed as an insulator in the conduits and their connections, as well as in the storage batteries themselves. Short circuits are apt to be even more immediately dangerous in a submarine than in a battleship—hence the insulating rubber must not only be of the best, but more generously employed in these subaqueous craft.

There are many other directions in the navy where india-rubber in some form fills a useful office, but enough has been said to suggest how varied and how valuable are the parts this material already plays in the construction and the administration of our battle fleet.

#### RUBBER MANUFACTURES IN MARINE WARFARE.

LEAVING aside the various staple purposes for which rubber goods are used by the navies of the world, the "Gummi-Zeitung" calls attention to a number of rubber specialties, the uses of which in marine warfare are not generally recognized.

These objects are mostly defensive in character, including the blockade of harbors, the closing of mouths of rivers and other waters, the fortification of islands and other purposes. Blockading constitutes an extremely important feature of marine warfare, being effected by laying mines, by torpedoes, exploded from the land; by closing the waterways; and by other means.

In laying mines, cables are among the chief requirements. Insulation is effected by strips of rubberized cotton cloth, while rubber rings of various sizes are used in the insulation of the mines. The latter, coming more or less into contact with salt water, must be made of a good quality of rubber, with properties of resistance. The cables which connect the mines, or are necessary for their explosion, are of copper wire, likewise insulated with rubber. Ground cables are used on stony bottoms, placed in insulated hose, with an internal diameter of two-fifths of an inch. This hose is also protected by a thick rubbered covering wound round it, such as is used of late in compressed air hose. Cables were at one time protected by spiral wire or cords, but the danger of rusting, after various trials, led to the abandonment of this plan.

When high voltage currents are used in laying mines, those engaged in the work wear rubber gloves, while rubber garments serve to protect them against tempestuous weather.

Among the most recent improvements in mining, is the use of rubber hose, the interior of which is filled with explosive acids. This plan has been adopted as being preferable to tubing; this "mine-hose" having a diameter of about 2 inches. In its manu-

facture rubber substitute has been used for increasing the lightness.

This hose, which as a rule is about 100 feet long, costs the equivalent of \$187.50. As the blockade of a waterway usually requires about 36 mines of this kind, an idea can be formed of their costly nature.

Another feature in naval warfare affecting the use of rubber, is the employment of torpedoes. In the torpedo itself, the rubber insulation is a point of extreme importance. The acids are conveyed to the gun-cotton through small rubber hose inside the torpedo. Hard rubber is likewise used for various purposes in different parts of the torpedo. Cables with rubber insulation are important adjuncts in torpedo warfare.

In the forts defending the entrances of harbors, rubber is used in various ways. Speaking-tubes convey the instructions for firing, while the gun-sights are fixed in rubber supports. For the prevention of concussions, rubber rollers and buffers are used. Hard rubber is used in various ways in guns, the wheels and other parts of the mechanism being rubber-covered. The mouths of the guns are now covered with rubber, instead of, as formerly, with leather; the use of leather having led to rusting. In very damp positions the use of rubber for covering the mouths of guns has been found of practical advantage, as it thoroughly excluded damp. These covers, or stoppers, are, moreover, expensive. For 8-inch guns they cost the equivalent of \$20, and for 17-inch guns about \$50.

Besides forts and artillery depots, warships also carry mines for aggressive or defensive operations.

In conclusion, the anticipation is expressed that the use of rubber manufactures in marine warfare is destined to increase, to the benefit of that industry.

#### HARD RUBBER BALLS ON SOFT RUBBER ALLEYS.

This is an entirely new and money-saving device, and becoming popular. It is called "box ball" and is really an entire bowling alley, pins, balls and all complete. By means of levers the pins can be replaced when knocked down and the balls returned to the player.

The bowling surface of the alleys is a mixture of cork and rubber and, with ball muffers at the end of the alleys, makes the bowling almost noiseless. The balls are about 4½ inches in diameter and made of hard rubber.

[The American Box Ball Co., Indianapolis, Indiana.]



A RUBBER BOWLING ALLEY.

Should be on every rubber man's desk—The Rubber Trade Directory of The World, 1912.



## Mineral Rubbers.

### AN ARTIFICIAL OR MINERAL RUBBER.

NEARLY six years ago the English manufacturers of rubber goods became deeply interested in a new substitute for the natural caoutchouc. An English inventor believed that he had hit upon a method of turning wheat into that commodity, so rapidly growing scarcer. This in spite of



EXPOSED SIDE OF ELATERITE LEDGE.

the fact that over three hundred patents had, up to that time been taken out in the British Patent Office on substitutes for rubber. But somehow or other the new substitute failed to gain the place in the rubber world that was expected of it.

Now it seems a bit curious that men of an inventive turn should have thus been racking their brains when there lay to their hands a mineral substance, commonly known as "mineral rubber," which, even in its raw state had many of the characteristics of crude rubber. Elaterite is the scientific name for this substance. In color, elasticity, and other qualities it brings strongly to mind the distinctive characteristics of India-rubber. It was first discovered at Angers, in France. Later deposits were noted at Castleton, in Derbyshire, England, in the lead mines of Odin, at Alteland, South Australia, in Wasatch County, Utah, and elsewhere. The Wasatch deposits will be considered presently in another connection. In the Coorong district of South Australia a substance is found which, known as Coorongite, is believed by some to be practically the same as elaterite. Other chemists declare it is a vegetable product; the genuine elaterite being a mineral substance. This elaterite varies, according to the locality in which it is found, in quality and consistency. Sometimes it is as thick and unyielding as frozen tar. Commonly, however, it is fairly soft, and sticky. It is a hydro-carbon, generally dark-brown in color. Sometimes it goes under the name of elastic bitumen. Though so closely resembling rubber, practical chemists found no way of putting it to commercial use in that line, though other valuable uses had been found for it. All at once, however, this situation was changed with the finding of a new substance, now called tabbyite, in Wasatch County, also the home of elaterite. This peculiar name was given the substance in honor of old Chief Tabby, of the Unita Indians, who directed chemists to this important find.

Elaterite, it has been said, is a hydro-carbon. Tabbyite is also a carbon, belonging to the resinous group. A combination, or, rather, an amalgamation of the two appears to have

formed an artificial rubber, difficult to distinguish from the genuine. A chemical analysis shows the following proportions of constituents: Carbon, 87.12 per cent; hydrogen, 12.88 per cent. The essential characteristics of rubber are also there, such as elasticity, texture, color, etc. If the compound be touched with fire the odor of burning rubber very promptly offends the nostrils.

In making this compound two parts of elaterite to one of tabbyite are used.

The finer grades of rubber, it is true, have not been produced. The chief material so far manufactured has been for matting, belts, insulation covering, etc.

### SOME TYPES OF MINERAL RUBBER.

THE term "mineral rubber" as used has but little significance in determining the quality which it represents. The base of practically all known so-called mineral rubbers is asphaltic.

Mineral rubber should be classified in such a way that the chief characteristics could be easily distinguishable, so that a manufacturer could determine which one would be most suitable for the purpose for which he might want to use it. In making such a classification the essential qualities of each different grade, both physical and chemical, should be determined.

For a manufacturer to take one quality of mineral rubber and



AN ELATERITE VEIN.

expect to use it in different grades of compound that he may wish to make, with equally satisfactory results, is as much folly as it would be to take one grade of any other ingredient that he wishes to incorporate in a compound and expect it to work as well in one compound as another.

The nature of mineral rubber being asphaltic means that they are all of them hydrocarbon compounds. It is a well known fact that any hydrocarbon will, when subjected to sufficient heat, throw off gaseous matters. If the temperature at which a compound will throw off these gaseous products is below that which is used in the vulcanization, it will be detrimental in such compound. As these gases must of necessity secrete themselves somewhere, and if the compound is one which is vulcanized in a mold or any air-tight compartment, it naturally follows that the gas will cause the compound to become porous.

Now taking the same class of compound and using a hydrocarbon therein that would not show any gaseous products at or below the temperature at which the compound was vulcanized, this result would not follow.

Again there are those so-called mineral rubbers which are produced by the treatment of asphalts segregated in the fractional distillation of petroleum. Subsequent to the segregation they are treated to a heating and drying process, by pumping in a current of air; sometimes accompanied by steam. This is pumped into the compound in the process of the so-called oxidation, or drying up of the compound. It is a well established fact that this class of hydrocarbons, exposed to atmospheric conditions do not have the wearing qualities that the asphalts have, which have not been thus treated; the theory, which is founded on practice, being that the life of an asphalt depends upon how long it will resist oxidation when exposed to atmospheric conditions. The treating of the asphalt for the purpose of oxidizing it, prior to use, simply shortens the life of the same proportionately to the amount of oxygen which it takes in and the amount of oxygen it takes to destroy it.

It would follow that in the use of these qualities of hydrocarbons in rubber compounds, the same result would be obtained, i. e., a rubber compound which contained a mineral rubber, produced by the oxidizing process, would have a shorter life than a rubber in which a mineral rubber was used which had not been previously treated by an oxidizing process. It would therefore seem reasonable for the rubber manufacturer to know and determine the quality of his hydro-carbon as definitely as he does the quality of his reclaimed rubber or other ingredients used in his compounds.

There are other grades of hydro-carbons which contain various quantities of paraffine and sulphur, such elements being contained in the natural asphalt which do not determine themselves until sufficient heat has been applied for decomposition to take place and free these elements.

It is of importance to know at what point such decomposition

takes place, as, should it take place at a temperature less than that used in the vulcanization of a rubber compound, wherein such hydro-carbon was used, it would have a very detrimental effect upon the compound, and unless a manufacturer does know at what point this decomposition will take place, he cannot determine what this effect will be except through the channel of experimenting. If he knew, he would then be able to determine wherein he could use the hydro-carbon safely.

There is no doubt that this so-called mineral rubber can be used advantageously when properly applied, and there is no reason why a rubber manufacturer should not give to the producer of mineral rubbers the same close attention which he does to the producers of the different grades of rubber, and insist that the producer of the hydro-carbon give him definite information relative to its constituents.

It is true that many of the rubber factories today have well equipped chemical laboratories, but it is doubtful if there are any of them that are equipped to properly test a hydro-carbon. Chemical analysis means but little in this class of materials, the

important question being what this chemical process will do under conditions essential to use in the manufacturing of rubber compound.

Too many mineral rubbers are sold based solely upon the question of price, and too many rubber manufacturers have attempted to use them from this same standpoint, subsequently deprecating them because they did not do all that was expected; whereas if they had known what the action would be when the mineral rubber received the

treatment given it, they would have known as well that they could not secure satisfactory results.

There is probably no other place in the world where hydrocarbons are given the close study which they receive in the manufacture of the so-called rubber roofings. The surface of these roofings is composed of a compound purely asphaltic, and its life depends on the quality.

This class of manufacturers must of necessity know what the constituent elements of the compound are, and what are its actions when treated under the processes which they use. This means that practically every asphaltum that they use, is tested by a fractional distillation process either in their own laboratory, or by the firm which supplies them with the material being able to satisfy them that their reports relative to the products are correct.

If the rubber manufacturer will insist upon having a knowledge of his hydro-carbon along these same lines, he can without doubt use various grades of them advantageously in the different qualities of compounds which he manufactures; but for him to say



TRANSPORTING TARRYITE AND ELATERITE FROM THE WASATCH COUNTY, UTAH, DEPOSITS.

that he can secure the same results from a mineral rubber which will easily begin to decompose at approximately 200° Fahr., and which, owing to its soft and pliable nature will absorb a great amount of so-called dry fillers, that he can secure by using a mineral rubber that will not decompose at any temperature at which he vulcanizes, and which will not absorb a great amount of dry fillers, owing to its own density, would be as great folly as it is to say he can take a piece of acraflake rubber and produce an equally satisfactory result in all cases as he can with Up-river Pará.

There is a place in rubber compounding for all grades of mineral rubbers. There is a wide difference in the qualities of the different mineral rubbers, and it is as important to know what these different qualities represent as to know any other branch of compounding.

Mineral rubbers have qualities that no other ingredients which rubber manufacturers use contain. They are impervious to moisture, more impervious to the action of acids and alkalis, and most of them have a very definite di-electric strength, and a longer life than any other ingredient excepting some of the dry fillers that enter into rubber compounds.

Rubber manufacturers can well afford to investigate these; they are a new article in commercial use for the present age, although history shows they were in use four thousand years ago, and they are in good condition at the present time.

Properly applied they will give life to a rubber compound and at the same time in almost every instance will give a reduced cost, on equal quality basis.

LOWELL F. LINDLEY.

#### NEW SUBSTITUTE FOR HARD RUBBER.

IN fulfilment of its mission, the Philadelphia Commercial Museum has for some time been investigating the merits of a new substitute for hard rubber, discovered by a Philadelphian. The discoverer claims that he can take any waste fibrous substance, and convert it into a substitute equal, and in many cases superior, to hard rubber itself.

Although its properties have apparently only recently been noticed in the general press, it seems to have been undergoing, during the last two years, a series of detailed tests by well-known professors and engineers, both privately and at the Museum itself.

The earliest of these tests seems to have been that made at the Philadelphia Commercial Museum, October 19, 1910, with a view of showing the breaking down or puncturing voltage of the new fiber in comparison with other insulating materials. According to the report of Mr. G. R. Henderson, consulting engineer of the Baldwin Locomotive Works, who had attended the tests, they indicated that the puncturing voltage of the new fiber, with a thickness of .162 inch, was 45,000; as compared with records for hard rubber of 40,000 for .127 inch, and of 50,000 for .200 inch. The results with thinner samples were for the new fiber 20,000 with a thickness of .073 inch, as compared with 25,000 for hard rubber, with a thickness of .065. These tests are quoted as indicating that the new fiber is nearly, if not fully, equal to the best hard rubber. Tests of new material showed that it combines the mechanical properties of red fiber, with the electrical properties of hard rubber.

In a report on special tests of samples of the new insulating material, Professor Worrall E. S. Temple of the University of Pennsylvania, stated on November 1, 1910, that it completely outdistanced fiber, as well as the ordinary grades of rubber. Technically it showed up superior in toughness to rubber; withstanding, moreover, acid and boiling tests far better than the fiber samples tested, and being comparatively simple to mold. Subsequent tests made later in the month confirmed the above estimate of the new material.

Mr. Ernest L. Rowe, a well-known electrical engineer of Philadelphia, reported on December 12, 1910, that from the excep-

tional insulating qualities of the new material, he considered it superior to either porcelain, ordinary fiber, or hard rubber; adding that, in his opinion, the demand for it would supersede the present demand for hard rubber and fiber.

The next step was the circulation in March, 1911, of a statement accompanied by the above-named reports, to several hundred corporations, inviting them to attend a public test in April, 1911. This invitation was officially issued by the Commercial Museum, in whose hands had been placed the presentation of the new substance. In addition to these public tests, there were in 1911 a number of the most severe acid tests for storage battery purposes, with the most gratifying results.

Finally, in December, 1911, a further test was made at the Philadelphia Commercial Museum, before a score of experts, including those already named. The test was surrounded by secrecy and did not reach the press for some months; the result being, however, arrived at, that the production of a successful imitation of hard rubber was possible.

While the new material was thus being tested experimentally, its commercial possibilities were also being studied by the Museum. A special despatch from Austin, Texas, to the Boston Transcript, in February, 1912, reported that the new substitute would be obtained from green cotton-bolls, which are now worthless, but would thus acquire a value of 3 to 4 cents per pound. It had been pointed out by Dr. W. P. Wilson, Director of the Philadelphia Museum, that it had long been known that these unripe bolls (representing about 15 per cent. of the total) contain a sticky substance, akin to rubber; generally supposed, however, to have no commercial value.

Little machinery is required to produce the new material. It is claimed that all that is needed to supply America, and, in fact, the world, with hard rubber products, is to establish a few central plants in the cotton fields of the South. Before a group of the most prominent electricians, the inventor is said to have made his product from old waste materials, within twenty minutes; with no other mechanical aid than a cheap hand-press.

It is understood that the new material, as yet unnamed, is not yet being manufactured for this market. Large concerns are said, however, to have tried it. The progress of the new discovery will be watched with interest by the rubber industry. The British Consul at Philadelphia has forwarded details of the tests to the Commercial Intelligence Branch of the English Board of Trade; the facts being thus disseminated through the British and Colonial press.

THE INDIA RUBBER WORLD has known for some time regarding this new rubber substitute, the claims made for it, and its endorsement by a number of expert engineers and chemists, but has refrained from making any mention of it, in the hope that further and larger samples might be forthcoming which might be put to some practical manufacturing test. Up to the present time, however, as far as can be ascertained, this new substitute has not been made in sufficient quantities to enable any manufacturer to put it to practical use. The information regarding it as detailed above, is given for the benefit of those who are interested in the general subject of rubber substitutes.

#### MALAYAN COMPANIES' RETURNS.

The returns of six leading Malayan companies for the eight months ended August 31, compare very favorably with those for the corresponding period of last year. Exact figures are:

|                | Eight months to August 31 | 1911.     | 1912.     |
|----------------|---------------------------|-----------|-----------|
|                |                           | pounds.   | pounds.   |
| Anglo Malay    | .....                     | 461,966   | 516,760   |
| Pataling       | .....                     | 196,230   | 281,118   |
| London Asiatic | .....                     | 188,294   | 406,309   |
| Golden Hope    | .....                     | 162,488   | 85,760    |
| Selaba         | .....                     | 115,104   | 196,676   |
| Bikam          | .....                     | 54,906    | 97,630    |
| Total          | .....                     | 1,078,988 | 1,584,253 |



## The First Rubber Exhibit Ever Made.

It may seem a waste of energy to some people, when standing in the immediate presence of a great, live, spectacular exposition, like that now filling three floors in the Grand Central Palace, to hark back 61 years to the first rubber exhibit ever made; but a mention of that early exhibit is of value not only historically, but to people intimately associated with the rubber industry it will certainly not be devoid of interest.

Of course, it was Goodyear who made the exhibit. Not very much can be said about the rubber industry 61 years ago without mentioning Goodyear. The first general world's exhibition was held in the Crystal Palace, London, in 1851. Goodyear had taken out his patent for the vulcanization process only 7 years before, but he had made wonderful advances in rubber production, not only in the line of soft rubber goods—footwear, clothing and fabrics—but he had also made tremendous strides in the production of hard rubber, for which process his brother, Nelson, had taken out a patent in 1848.

Of course, Goodyear's name was known in England, and something was known regarding his exploits in rubber, but still in those days, as even at the present time, Englishmen were a little slow to accord recognition to American achievements. The thing had to be proved before they evinced any great interest in it; and Goodyear determined to prove to the English what he had been doing in the new rubber industry. Consequently he decided to make a memorable exhibit at the great Crystal Palace Show.

Though he was in wretched health—which, as a matter of fact, was his chronic condition, for his brain was at least five times too active for his body—and although he had to hobble around on crutches, he entered into the preparation of the exhibit with even more than his accustomed energy and determination. He spent \$30,000 on his Crystal Palace display; an unprecedented sum in those days, and a sizable sum for any entrant to spend at any exhibition, even at the present time. His exhibit was known as "Goodyear's Vulcanite Court" and it consisted of a suite of covered rooms, where everything was made of rubber—the walls, the roof, the ornamental cornices, the carpet on the floor and all the furniture. It was a wonderful display of rubber possibilities.

There were chairs of rubber; there were bureaus made of rubber; and boxes and shawl cases made entirely of rubber or rubber veneered. There was a fine display of rubber combs, something that Goodyear had just perfected, and in which he was trying hard to interest the public. There were buttons made of rubber—a distinct novelty at that time; and in addition there were many musical instruments made entirely of hard rubber. There were also rubber canes and cutlery with rubber handles. Rubber balloons of all sizes, inflated with hydrogen

gas, were floating in the air. A rubber balloon is, of course, to us an old story; but at that time it was a distinct novelty and naturally appealed greatly to the populace.

The accompanying illustration reproduced from a wood cut made at the time, gives some little idea of the artistic and highly ornamental character of this famous rubber court.

This exhibit was esteemed of such importance that when the Crystal Palace was moved to Sydenham and made a permanent institution, the Goodyear Vulcanite Court was moved with it and made a regular feature of the museum.

It was only natural that the English people should flock to see the rubber exhibition. It was the most striking novelty in the entire show, and Goodyear's name was on everybody's lips. He was given the "Grand Council Medal," the greatest distinction that the exhibition authorities could bestow upon him.

It is not to be wondered at, in view of the tremendous success of Goodyear's London exhibit, that he should have determined three years later, when the *Exposition Universelle* was held in

Paris (November, 1854), to repeat his display on that occasion; though the expense of the Paris exhibit was not as great as the earlier one, amounting only to \$20,000—this smaller expense being attributable largely to the fact that he still had a considerable part of his London "Court" intact. His display, however, was considerably larger than on the earlier occasion. In fact, at the Paris show he had two distinct rubber courts. This increased area came about largely



GOODYEAR'S EXHIBIT AT THE CRYSTAL PALACE SHOW, LONDON, 1851.

through Goodyear's intense patriotism. The Frenchmen had not allotted very much space originally to American exhibitors. The American committee applied for more space, which was conceded. They then discovered that they did not have exhibitors enough to fill this new territory, and they appealed to Goodyear. He determined that American reputation for enterprise should not be permitted to suffer if he could prevent it. Consequently he took double the amount of space he had intended, and erected a second court.

His exhibit there created a greater furore even than the earlier one in London. It stood in the very center of the exposition, and all Paris, to say nothing of the rest of the continent, flocked to see this wonderful rubber revelation.

In addition to the articles shown in the London show he had some elaborate rubber furniture very handsomely inlaid, which naturally attracted much attention. Besides the rubber carpets on the floor, he had in this exhibit many rubber pictures on the wall—landscapes and portraits artistically painted on hard rubber panels. The Emperor himself, Napoleon III, was greatly interested. An amusing incident connected with the Emperor's visit was given in some detail in the April number of *THE INDIA*

RUBBER WORLD, and need only be briefly alluded to now. The Emperor's visit to the exhibit was made early in the day during Goodyear's absence. There was a pile of large round rubber balls standing in one of the courts. The Emperor, whose mind was more or less constantly on matters military, viewed this pile with great interest, and turning to a companion said: "I have always thought that rubber could be used in warfare as a means of defence, but it never occurred to me that it was suitable for projectiles; but there you see a pile of rubber cannon balls." The pile was really one of footballs, but nobody ventured to set the Emperor right.

The French were greatly impressed with the Goodyear ex-

hibit. He was not only given the "Grand Medal of Honor," but that greatest of French distinctions, the "Cross of the Legion of Honor," was bestowed upon him.

Tremendous strides have been made since that day in the rubber industry. The entire value of the American rubber output in 1851 was less than \$1,000,000; today it is over \$220,000,000; but though it would not be impossible, it certainly would be quite difficult, to reproduce today the wonderful rubber exhibit that Goodyear presented to the English people at the Crystal Palace in 1851, and again with notable additions repeated three years later in Paris. Still there is much in the present rubber show that Goodyear would never have dreamed of.

## Earlier Rubber Expositions.

WHILE, of course, the interest of the rubber trade now centers upon the great aggregation of rubber exhibits brought together in Grand Central Palace in New York, at the same time, it may not be out of place, as a matter of comparison if for no other reason, to glance very briefly at the three earlier rubber exhibitions; one—somewhat local in its character—held in Ceylon in 1906, and the other two of an international nature, held in London in 1908 and 1911.

### THE CEYLON RUBBER EXHIBITION OF 1906.

ALTHOUGH exhibitions, international, local, and sectional, had long been held in connection with other branches of industry, it was reserved for Ceylon to start in 1906 the series of rubber exhibitions, the latest of which is now opening its doors in New York.

Leading officials took a prominent part. Sir Henry Blake, G. C. M. G., the governor of Ceylon, opened the exhibition,



SIR HENRY ARTHUR BLAKE, G.C.M.G.

attended by a military escort; likewise acting as its president; thus anticipating the position he subsequently filled in London. Among other well-known names intimately associated with the exhibition, were those of Dr. J. C. Willis, director of the Botanic Gardens; Mr. M. Kelway Bamber, Government Chemist, and the Hon. Mr. E. Rosling.

Prizes were offered for the best samples of Pará in biscuit, sheet, crepe, worm and scrap; for *Castilloa* and Ceara in different forms; and for Rambong (*Ficus*). With a view to a more extensive scope than would have been afforded by Ceylon alone,

the competitors were divided into two sections. One of these competitions was limited to Ceylon exhibitors, while the other also included competitors from other countries.

In commenting at the time upon the probable effects of the Ceylon Exhibition of 1906, THE INDIA RUBBER WORLD said:

"One result of the exhibition will be to promote interest among planters in scientific plantation methods, to the end that better returns and larger profits will be made. . . .

"Another result of the holding of the Ceylon exhibition will place a higher estimation in public opinion upon rubber planting, and lead to the more intelligent consideration of the subject by investors."

Who will deny that these predictions have been fulfilled and that the seed thus sown has germinated and fructified in the immense extension which has since marked the rubber industry?

It is of interest to note that Malayan planters participated in the competitions to which they were admitted and carried off honors in friendly rivalry with the Ceylon rubber growers.

### THE LONDON EXHIBITION OF 1908.

WHILE the Ceylon Rubber exhibition of 1906 had been confined to the products of Southern Asia, its natural sequence was of the much broader scope displayed in London two years later. The "First International Rubber and Allied Trades Exhibition," held at Olympia, the largest exhibition building in London, took place during the two weeks ending Saturday, September 26. As an illustration of the attention given to the matter by the London press, it is of interest to recall the fact that the "Times" came out on the morning of the opening day with an advance notice of the show, resulting from the "press view" of the previous Saturday afternoon, occupying several columns. Not a single important feature was overlooked. Special interest was likewise displayed by the financial and scientific press, as well as by the leading metropolitan and provincial journals.

One reason for this attention was the growing interest taken in rubber by investors, many of whom had by that time made money in rubber, while others, whose holdings were of more recent date, were anxious to gain information as to the prospects of their being equally fortunate, when the younger plantations matured.

Another cause of the success of the exhibition was the intelligent manner in which it was brought to the notice of the public. Never, perhaps, was an exposition of such an international character, and on so large a scale, organized with so little direct government aid from any quarter.

#### CEYLON.

Following up its local exhibition of 1906, Ceylon had a comprehensive exhibit ready for display. It comprised the products of some 30 plantations, covering every kind of rubber produced in the colony. The Botanic Gardens sent two *Hevea* trees of two years' growth and one of three years'.

## STRAITS SETTLEMENTS AND MALAYA.

The exhibits from the Straits Settlements and the Federated Malay States occupied a special section; having been contributed by the government, a number of leading estates, and by the botanic gardens at Singapore and Penang. A picturesque feature was an old Malay house from the Malayan Planters' Association. There were many specimens of rubber, mostly *Hevea*.

## AFRICA.

Africa was principally represented by British East Africa, with exhibits illustrating cultivation as well as experimental work.

## DUTCH INDIES.

The Dutch government had appointed a commission to secure adequate representation of Holland and her colonies. Samples and graphic illustrations of rubber at various stages were contributed by the official body referred to. These represented the products of a number of leading plantations in Java and Sumatra.

An interesting exhibit was that of the Haarlem Colonial Museum, including rubber and gutta percha from the Dutch Indies, as well as balata from Surinam.

## BURMA.

Specimens of native rubber-yielding creepers were shown, in conjunction with samples of *Hevea* and other plantation rubber.

## SOUTH INDIA.

South India was represented by an exhibit of the Penyar Rubber Co., of Travancore.

While the Eastern Hemisphere was thus well represented, the Western made an equally good showing, in accordance with its recognized position as a source of rubber.

## BRAZIL.

The principal representation of Brazil was made by the Associação Commercial do Amazonas, of Manaus, with the support of the Amazonas State government. Seventeen lots represented

the exhibition, so that the principal rubber exhibit was that of the Mexican Rubber Co., of London. Ed. Maurer, of New York, made an exhibit of guayule from some half dozen companies.

## WEST INDIES.

Exhibits from Trinidad, Dominica, British Guiana and St. Lucia, had been arranged by the West Indian Committee, London, after having been prepared by the permanent exhibition committees of the various colonies.

Such were the principal features of the exhibition as regards rubber. The various accessory features of rubber plantation requisites, scientific apparatus, rubber works machinery, plantation machinery and appliances, and factory supplies were likewise fully represented.

An important feature was the "rubber conference," in which a number of the leading rubber scientists from all countries took part.

## SECOND INTERNATIONAL RUBBER AND ALLIED TRADES EXHIBITION.

NOTHING afforded more convincing proof of the success of the London Rubber Exhibition of 1908 than the fact of its repetition on an enlarged scale three years later in 1911. That triennial rubber exhibitions are destined to become a feature of the rubber trade is illustrated by that system forming part of the newly enacted Brazilian legislation.

Though on account of its recent occurrence, the consideration of the London Rubber Exhibition of 1911 belongs rather to present than past history, that occasion calls for a brief retrospect, as an introduction to that now opening in New York.

While the 1908 exhibition had been held at Olympia, situated in the residential West End quarter of Kensington, that of 1911 took place in the northeastern part of the city at the Royal Agricultural Hall, Islington, which was admirably adapted for the



FRONT VIEW OF THE BUILDING WHERE THE LONDON RUBBER EXHIBITION WAS HELD IN 1908.

the various grades of Brazilian rubber. In all the Brazilian rubber exhibit amounted to about 10 tons; the largest lot being one of 1½ ton of fine rubber from the river Acre.

In order to give the exhibit the appropriate "local coloring," complete outfits of the apparel worn by the *Seringueiros* and full sets of tapping tools supplemented the rubber exhibit proper.

## MEXICO.

A collection of important samples had not reached in time for

purpose. It was within a short distance of the busiest manufacturing and trading districts of the British metropolis, being thus convenient for the daily visits of business men interested in crude or manufactured rubber. "Mincing Lane" was within less than half an hour's drive.

Under the presidency of Sir Henry A. Blake, ex-Governor of Ceylon (who had presided over the 1906 Ceylon exhibition), and the management of Mr. A. Staines Manders, coupled with the



work of Miss D. Fulton as secretary, there was the organization necessary for the ultimate success which crowned the efforts made.

The general arrangement by countries was on practically the same lines as those of the 1908 exhibition.

#### CEYLON.

Twenty-four plantations contributed about 4,500 pounds of samples representing *Hevea* in all its various forms, as well as *Ceara* and *Castilloa*. Sections of rubber trees and tapping tools were shown by the Ceylon Research Committee and the Royal Botanic Gardens.

#### STRAITS SETTLEMENTS AND MALAY STATES.

From these possessions came 100 lots of rubber, weighing 2,000 pounds, comprising those varieties mentioned in regard to Ceylon, as well as others, such as *Ficus*.

#### SOUTHERN INDIA.

Eight estates from this quarter participated with samples and photographs.

#### BRITISH AFRICA.

The British East Africa Protectorate, the Uganda Protectorate and the Gold Coast Colony sent exhibits of their products.

#### WEST INDIES.

Trinidad furnished samples of *Castilloa* and *Hevea*, together with tapping tools and other requisites of rubber cultivation, Jamaica and Dominica being also represented. British Guiana sent samples of *Balata* and *Hevea*, with special publications.

#### BRAZIL.

A remarkable collection was furnished by the State of Pará, as well as by the Musée Goeldi, while the Commercial Association of Manáos exhibited 385 la rge pelles of fine and 91 balls of

German South Sea possessions, were mostly from sixty estates, but in part from Government institutions. These specimens had been assembled with Teutonic thoroughness, knowledge and enterprise.

#### BELGIUM.

Samples, maps and charts illustrated what the Belgian Congo is doing in rubber. Eighty classified rubber samples were contributed by the Antwerp Chamber of Commerce.

#### FRANCE.

Interesting samples of rubber and a number of photographs were sent in by the Governments of Madagascar, the French Congo and French Cochin-China.

#### PORTUGAL.

Samples of *Ceara* from the Portuguese colony of Angola formed an interesting exhibit.

#### ENGLISH CRUDE RUBBER EXHIBITS.

A graphic summary of the rubber resources of the British Empire was furnished by the Imperial Institute, and was illustrated by a variety of samples. Various exhibits were arranged by rubber share brokers, a crude washing company and the British Murac Syndicate, Limited.

#### RECLAIMED AND MINERAL RUBBER.

These features of the English and American rubber industry were appropriately represented.

#### RUBBER MILL AND PLANTATION MACHINERY.

There were twenty-five English exhibitors in this line, in which David Bridge had the most complete assemblage. Among American firms exhibiting were The Farrel Foundry & Machine Co. and The Birmingham Iron Foundry.



PRIZES OFFERED AT THE 1911 EXHIBITION.

Cacho. *Ceara* rubber from Southern Brazil also constituted a feature of interest.

#### MEXICO.

An attractive exhibit was the miniature rubber factory exhibited by the Intercontinental Rubber Co.

#### DUTCH INDIES.

From 150 estates in Java, Borneo and Sumatra came a large number of rubber samples, including *Hevea*, *Ficus* and *Castilloa*.

#### GERMAN POSSESSIONS.

Some 350 lots from German East and West Africa and the

#### SUPPLIES FOR RUBBER MANUFACTURERS.

A full assortment of these was furnished by leading companies.

#### MANUFACTURED RUBBER GOODS.

Much interest attached to the exhibits of the North British Rubber Co. and the Premier Reforming Co.

#### THE RUBBER CONFERENCE.

This was one of the most valuable features of the exhibition and calculated to render its effects of permanent value to the industry, but the conference about to meet in New York bids fair to surpass its London predecessors.

## The Third International Rubber and Allied Trades Exposition.

### WHAT IS TO BE SEEN AT THE GREAT RUBBER SHOW.

**Q**UITE a good deal has been heard during the last year by the people at large, and especially by the people in the rubber trade about the big Rubber Exposition, to be held at the Grand Central Palace, New York—Lexington avenue, between 46th and 47th streets—from September 23 to October 3. It is safe to say that practically every one in the rubber trade will attend this exposition, to say nothing of the thousands of people from the common walks of life. It will be an interesting question, therefore, with rubber people generally as to what there is to be seen there.

The Grand Central Palace is probably the best building for exposition purposes in the United States—certainly in New York. It has three floors that can be used for the display of exhibits—the main floor which occupies the entire width and depth of the building, and has an area of 200 by 275 feet, and two additional floors—the mezzanine and the balcony which have the same space, with the exception of the open court in the center which looks down on the main floor. Altogether the three floors comprise 160,000 feet of floor space, which is enough to give adequate display space for the largest expositions that are likely to occur for many years.

When entering the building by the main entrance, on the Lexington avenue side, one will discover at once that he is walking on rubber—everywhere the flooring is made of this easy, resilient material. There is rubber on the stairs, in the aisles and in the booths. It was intended originally to have the avenue in front of the building paved with rubber, but a number of difficulties arose and it was abandoned. They are still ahead of us in London in regard to this matter, for there is quite an area of rubber pavement in the great English metropolis—for instance, around the railway stations and in front of some of the finer hotels. When our friends succeed in producing synthetic rubber at 25 cents per pound, rubber pavements will be plentiful in American cities, but with Pará rubber still

quoted at \$1.25 the progress of rubber pavement laying is destined to be rather slow. But rubber flooring is coming more and more into vogue, as will be seen at the rubber show.

The exposition is divided into three parts, first, rubber manufacture and manufacturing machinery, which will occupy the main floor; second, the allied lines, including reclaimed rubber, chemicals and compounding mixtures on the mezzanine floor; and third, crude rubber, which will fill the third floor or balcony. The first exhibit that the visitor encounters on mounting the broad stairway to the main floor is that of the United States Rubber Co., which stands at the head of the stairs—a most commanding position; to which undoubtedly the company is entitled

among American manufacturers, because of its commanding position in the trade—by reason of its huge capital, its large business, and its great number of factories, scattered through this country and Canada. There is nothing conspicuously commercial about this exhibit. The only rubber product which it exhibits is a number of automobile tires made by one of its constituent companies, the United States Tire Co.

The booth of the United States Rubber Co. will occupy 1,800 square feet, and will be divided into two reception rooms, equipped with elaborate mahogany furniture and supplied with a number of sten-



THE GRAND CENTRAL PALACE, NEW YORK.

ographers, telephones, etc., for the convenience of visitors.

The general woodwork comprising the exterior will be done in mahogany finish, and the pillars draped in flags, and on the counters set at angles affording the best display, will be pictures of the various factories of the company. The spaces in front of the booth will be covered with rubber tiling made by the New York Belting and Packing Co.

The companies taking part in this exhibit will be the United States Rubber Co., The General Rubber Co., The Rubber Goods Manufacturing Co. and The United States Tire Co.

THE ESSEX RUBBER CO., INC.

The Essex Rubber Co., Inc., of Trenton, New Jersey, displays

a very considerable variety of rubber products, comprising rubber soles and heels, sheet rubber soling, tap soles and heel cushions; also a variety of tire accessories like blow-out patches and tire inner liners. In addition there is a variety of rubber bumpers, "Pyramid" matting, "Radiator" hose, packing, both of rubber and asbestos, and pump valves. To those who are athletically inclined, there are sporting goods which will be of interest, including hockey pucks, rubber quoits, golf clubs with rubber handles, tennis rackets with handles of rubber, and rubber bicycle handle bar grips.

#### THE HOME RUBBER CO.

The Home Rubber Co., also of Trenton, New Jersey, has an interesting display of water hose, steam and suction hose, and various kinds of valves and gaskets, and a number of automobile tires.

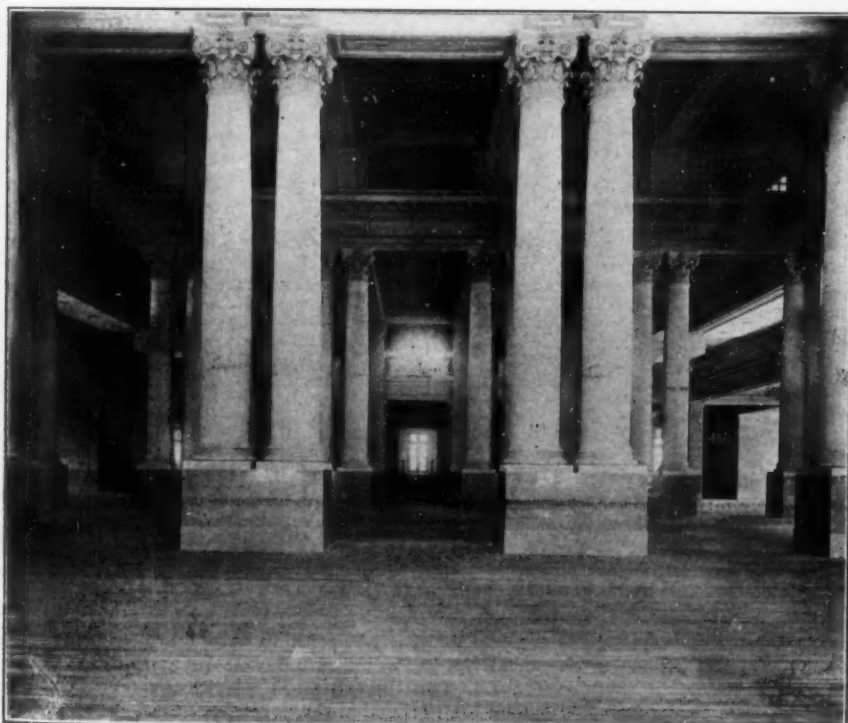
#### THE INDIA RUBBER WORLD.

There is a superb display of rubber machinery, quite a little of it in motion, on this floor, but before you get lost in this mechanical labyrinth it will well repay you to turn towards the south wall of the building and visit the exhibit of THE INDIA RUBBER WORLD. It is not as large as some of the others—Brazil, for instance, which has 15,000 square feet, while THE INDIA RUBBER WORLD has only 20 x 35—but its

anywhere on the face of the earth. Of course, the intrinsic value of some of the other exhibits—particularly where expensive



GRAND CENTRAL PALACE—VIEW FROM LOBBY OF GRAND STAIRCASE.



GRAND CENTRAL PALACE—VIEW OF EXHIBITION HALL.

exhibit differs from any other in that the others could be duplicated, but the exhibit made by this journal cannot be duplicated

machinery is shown, or where there is a large quantity (often running into many tons) of crude rubber—is very large. But in all these instances the exhibits could be replaced if any untoward fate should overtake them. But in the case of these exhibits no replacement could be made; many of them are the only ones of their kind in existence. They are relics of Goodyear's days—some of them being products of his wonderful skill, and some of them reminiscent of the triumphs of his later years. They include the book, made entirely of india-rubber—leaves, covers and all—which Goodyear labored on so long, and of which there is no duplicate. Then there are two fine life-size portraits, one of Goodyear, and one of Daniel Webster, painted on hard rubber panels, by Walsh, a distinguished artist of those days. The propriety of Webster's picture on rubber will be recognized on reflecting that Webster conducted the famous seven years' suit for the protection of Goodyear's patents, and finally won it, receiving as his fee, \$25,000, which at that time was the largest legal fee ever collected in this country—though a mere bagatelle to the average lawyer of today.

There are also specimens of hard rubber jewelry made by Goodyear, and the cross of the Legion of Honor conferred upon him by the French Government after his notable display of rubber products at the Parisian Exposition in 1854.



When Goodyear received his famous cross he was temporarily sojourning in prison for debt; for while a more honest man never lived, his constant pursuit of new rubber triumphs kept him in perennial financial straits. There are other priceless relics also at this exhibit, all of which were kindly put in the temporary possession of THE INDIA RUBBER WORLD by the Goodyear family.

In addition to these extremely interesting articles, there are several exhibits at this booth that could be duplicated elsewhere, but are not likely to be at this particular show. They were secured by the editor of the paper during his sojourn last winter in the rubber-growing countries of South America, and particularly in Venezuela. They consist of a number of unique designs made from rubber, as, for instance, a miniature rubber tree with a diminutive man tapping it, and various animals, insects and reptiles molded out of balata or gutta-percha. Taking it all-in-all this booth is likely to be voted a very interesting one—not only by rubber men, but by the casual visitor.

#### THE MANHATTAN RUBBER MANUFACTURING CO.

The Manhattan Rubber Manufacturing Co., manufacturers of mechanical rubber goods with factories, warehouses and executive offices at Passaic, N. J., show their product at the Rubber Exposition. The president of this company is Col. Arthur F. Townsend, and its vice-president, Elliot Henderson. Both of these gentlemen will devote more or less time to the company's exhibit.

The Manhattan Rubber Manufacturing Co. makes a good display of belting, emery wheels and all kinds of rubber hose; but what particularly attracts the visitor is the circular loom busy at work weaving hose.

#### FARREL FOUNDRY & MACHINE COMPANY.

The makers of rubber machinery are making a fine display of the products of their plants. Some of the machines are supplied with power and can be seen at work. Among the conspicuous displays of rubber machinery is that of the Farrel Foundry & Machine Co., which consists of an 8" x 16" motor-

connections so that suitable temperature may be obtained; whereas the washer rolls are solid, the machine being piped for washing the rubber. Both the mill and the washer run at a speed of 30 r. p. m., and the calender at about 15 r. p. m.

Such an outfit as the above is extensively used in the laboratories for experimental work, and has been found to work very successfully for this purpose. These machines show on a small scale the standard milling equipment used in the manufacture of rubber goods, and are miniatures of the company's larger machines in every respect.

#### THE TURNER, VAUGHN & TAYLOR CO.

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, are exhibiting an experimental outfit for vulcanizing rubber goods, which is complete and will be in operation at the exposition. They are represented by L. A. Vaughn and M. A. Pearson. The outfit, includes three machines, a washer, a mixing mill and a calender. The washer is a 6 x 12 inch "Vaughn" with chilled iron rolls, one corrugated and one with an ordinary smooth tool finish. The mixing mill is also a 6 x 12 inch "Vaughn," with chilled iron rolls, having faces ground and polished. On this machine is demonstrated the quick-removable adjusting screw and nut—an exclusive feature on these mills. Both the washer and the mixing mill have automatic guides, gear guards and all brass journals. The calender is an 8 x 14 inch three-roll "Vaughn," with chilled iron rolls, having faces ground and polished.

In addition to the machines described above, the fact might be mentioned that the line shaft is driven by an electric motor through a pair of cut herringbone gears and a patented multiple band clutch.

#### THE ADAMSON MACHINE CO.

The exhibit of the Adamson Machine Co., of Akron, Ohio, embraces a comprehensive line of automobile tires, molds, cores, models, prints and photographs. The head of this company is Alexander Adamson, recognized as a rubber machinery expert, whose newly erected plant at Akron, Ohio, is regarded as one

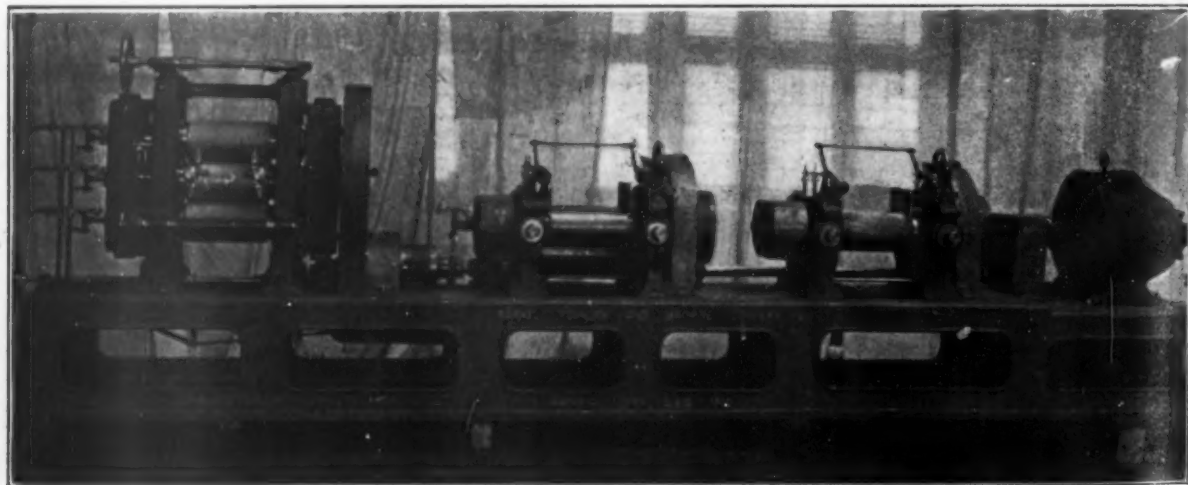


EXHIBIT OF THE FARREL FOUNDRY & MACHINE CO.

driven experimental outfit, mounted on a continuous bedplate, made up of a washer, mill and calender, as shown in the above cut.

The washer has corrugated rolls, with  $\frac{1}{16}$  inch cuts to the inch. The washer and mill are equipped with automatic guides and with their patented coil clutch, type G, which gives an instantaneous release and picks up the load without shock. The calender and mill have bored rolls, and are fitted up with steam

of the most completely equipped of its kind in the country. This is exhibit No. 16.

#### THE UNITED SHOE MACHINERY CO.

Exhibit No. 19 is that of the United Shoe Machinery Co., which concern practically controls the shoe machinery interests of this country. They are making an exceedingly interesting exhibit of their various machines, some of which are adapted for certain classes of rubber manufacture.

The United Shoe Machinery Co., also has machinery in motion, which proves to be a drawing feature.

#### JOHN ROYLE & SONS.

One of the most important mechanical devices used in rubber manufacture is the tubing machine. Specialists in the production of these are Messrs. John Royle & Sons, Paterson, New Jersey. This concern, which is one of the oldest and best known among the producers of rubber machinery, has specialized in tubing machines for thirty years and has achieved notable success in their production. Official recognition has been given the Royle product by the granting of patents on tubing and insulating machines aggregating more than 100. This is exhibit No. 22.

#### J. P. DEVINE CO.

Exhibit No. 25 is that of the J. P. Devine Co., of Buffalo, New York, who are showing their famous Vacuum Chamber Dryers for rubber, compounds and other materials used in the manufacture of rubber goods, Vacuum Rotary Dryers for whitening and other chemical compounds used in vulcanization; Deresinating and Solvent Recovering Apparatus. Mr. Devine is a recognized expert on matters pertaining to Vacuum Systems. The exhibit is in charge of Chas. Devine and F. Howard Mason.

#### THE HOGGSON & PETTIS MANUFACTURING CO.

The Hoggson & Pettis Manufacturing Co., New Haven, Connecticut, specialists in rubber tools and devices, are showing calender roll engraving, rolls of all descriptions, dies for cutting and dies for marking, and hand tools of various descriptions, such as rollers, stitchers, gauges, etc. Exhibit No. 113.

#### WERNER & PFLEIDERER CO.

The Werner & Pfeleiderer Co., Saginaw, Michigan; Cannstatt, Berlin, Vienna, London, Milan and Moscow, are exhibiting their well-known Universal Rubber Washer and Universal Kneader. Both of these machines are extensively employed in rubber mills throughout the world. The manager of the American plant is Mr. Emil Staehle. Exhibit 27.

#### THE VICTOR BALATA AND TEXTILE CO.

The Victor Balata and Textile Belting Co., 51 Beekman street, New York City, are showing balata belting for power, elevating and conveying purposes; fasteners, joints, lace leather for all purposes, balata cement, gum, and a special car lighting belt for axle-driven generators. This is exhibit No. 28.

#### THE CURTIS & MARBLE MACHINE CO.

The Curtis & Marble Machine Co., Worcester, Massachusetts, are showing their well-known brushing machine, mill sewing machine, measuring rolls and dials, and winding bars for paste-board tubes; also photographs and drawings of various other machines of interest to the rubber trade. Mr. Charles Marble is the president of this concern. Exhibit No. 29.

#### THE BUFFALO FOUNDRY AND MACHINE CO.

Exhibit No. 30 is that of the Buffalo Foundry & Machine Co., Buffalo, New York, which company will display their vacuum dryers, reclaiming apparatus, fabric impregnating apparatus, expansion tanks, vacuum pumps and laboratory devices, which will be among the very interesting exhibits of the show. The attendants in charge of the exhibit are E. G. Rippel, sales manager; H. E. Jacoby, New York City representative; E. G. Sleeper, New England representative; O. S. Sleeper, chief engineer, and H. D. Miles, president.

#### THE BUREAU OF STANDARDS.

The Bureau of Standards, Department of Commerce and Labor, Washington, District of Columbia, U. S. A., exhibits its official testing laboratories, which are equipped to investigate and test a wide range of materials, including mechanical rubber goods. New methods of testing are in process and new types of machines are being developed for the purpose of investigating the properties of crude and manufactured rubber. This is exhibit No. 31.

#### UNITED STATES RUBBER RECLAIMING WORKS.

The United States Rubber Reclaiming Works, factories at

Buffalo and offices at 277 Broadway, show a complete line of the company's product in addition to a working exhibit, reflecting the operation of a reclaiming factory. This exhibit, which is No. 104, is in charge of Mr. Clarence Loewenthal.

#### E. H. CLAPP RUBBER CO.

The E. H. Clapp Rubber Co., with factories in New England and New Jersey, and offices at 49 Federal street, Boston, Massachusetts, show samples at exhibit No. 105 of standard grades of reclaimed rubber and a varied line of articles containing their product.

#### NEW JERSEY RUBBER CO.

The New Jersey Rubber Co., offices at 120 Franklin street, Boston, Massachusetts, have an interesting exhibit, No. 106, of insulated wire, hard rubber goods, mechanical rubber goods and products manufactured from reclaimed rubber.

#### AMERICAN WAX CO.

The American Wax Co., works at Baltimore, offices at 105 Summer street, Boston, Massachusetts, show "Amax" mineral rubber and merchandise into which it has been incorporated. The exhibit, No. 100, will be in charge of Mr. William C. Coleman, the general manager of the office.

#### J. W. COULSTON & CO.

J. W. Coulston & Co., importers and manufacturers of dry paints and colors, 80 Maiden lane, New York City, are showing a comprehensive line of golden and crimson antimony, barytes, bone black, black hypo, green oxides, Indian reds, Tuscan reds, siennas, ultramarine blue, umbers, vermilion (English), chrome, tile and zinc yellows, zinc oxide, red green and white, and zinc sulphide (lithopone).

#### GEORGE A. ALDEN & CO.

George A. Alden & Co., 77 & 79 Summer street, Boston, Massachusetts, manufacturers of the famous mineral rubber known as "Emarex," are making a most interesting exhibit including a tread mill, the floor of which is made of "Emarex," and over which two sharply shod horses are plodding their weary way daily without making any perceptible effect on the flooring. Mr. George Watkinson, one of the best known rubber men in the trade is in charge of the Emarex exhibit, which is No. 100.

#### RUBBER REGENERATING CO.

The Rubber Regenerating Co., of Mishawaka, Indiana, show, at exhibit No. 101, reclaimed rubber by alkali, acid and mechanical processes. This company is said to employ 1,000 hands in addition to the laboratory force of 30 chemists.

#### MONATIQUOT RUBBER WORKS CO.

The merits of "Naturized" rubber are effectively displayed by the Monatiquot Rubber Works Co., of South Braintree, Massachusetts. It is claimed that the peculiar nature of the processes used in its manufacture constitute an advance in the art of reclaiming waste rubber. While a relatively young concern, the demand for its products has necessitated frequent addition to its productive capacity.

#### THE LOEWENTHAL CO.

The Loewenthal Co., of 481-483 Washington street, New York, is known as one of the largest scrap rubber dealers in the world. It has offices and warehouses in New York, Akron and Chicago, as well as representatives throughout the United States. It is estimated that the average yearly tonnage handled by this company represents about 35 million pounds of domestic and foreign scrap.

#### PFALTZ & BAUER.

As agents for the well-known "List" Chemical Factory of E. de Haen, Seelze, near Hanover, Germany, Pfaltz & Bauer, of 300 Pearl street, New York, make a special exhibit of golden and crimson sulphuret of antimony and other compounding ingredients for the rubber industry.

## LEHMANN &amp; VOSS.

In harmony with its position as one of the largest German chemical factories, the firm of Lehmann & Voss, of Hamburg, makes a thoroughly representative exhibit of its various products, specially intended for the rubber industry. In addition to the various forms of magnesia and other salts, there is a full display of the numerous coloring and filling ingredients made by the firm; all being finely bolted and of uniform quality. One feature of particular interest is that stock is carried by the New York representative, Mr. R. Bärdeuyck, No. 5 State street.

## THE AMERICAN ASPHALTUM &amp; RUBBER CO.

The American Asphaltum & Rubber Co., of 600-619 Harvester Building, Chicago, makes a special exhibit of its "Pioneer" M. R. Hydro-Carbon, which has achieved an international reputation for its high percentage of purity. Another important feature is that the quality and melting point are always uniform.

The Canadian offices are: The Canadian Mineral Rubber Co., Limited, Winnipeg and Toronto; the London offices being the Canadian Mineral Rubber Co., Limited, 32 Victoria street, Westminster, S. W.

Meyer & Brown, successors to A. P. Morse & Co., are showing samples of crude rubber. Exhibit No. 215.

## DUTCH GUIANA CULTURE CO.

Exhibit No. 217, of the Dutch Guiana Culture Co., with headquarters at the Harris Trust Co., Chicago, Illinois, is an interesting showing of *Hevea* trees at different ages, including the process of tapping, and samples of rubber grown in Dutch Guiana. The president of this company is L. C. Lawton, of Chicago, Illinois.

## HENDERSON &amp; KORN.

Henderson & Korn, 82 Beaver street, New York City, have an attractive booth of tropical design, decorated with Indian hunting equipment and basket work collected at the headquarters on the Rio Negro. The exhibit consists of samples of a few standard grades in which this concern deals.

The United Malaysian Rubber Co., are showing samples of Jelutong, and their booth, No. 221, has attracted the attention of a great many visitors. The agent of this company in New York is J. Warren Bird, 2 Rector street.

## THE NEW YORK COMMERCIAL CO.

The New York Commercial Co., 605 Dun Building, New York



E. V. WILCOX.



EDWARD G. SALMON.



WILLIAM SHAKESPEARE.

This company issued a very artistic invitation to sundry members of the trade to visit its exhibit. This invitation is handsomely engraved and is sent out with a personal card of the sender folded in tissue paper, all enclosed in an inner envelope in addition to the addressed envelope, the whole thing being quite after the style of an invitation to a fashionable wedding or other high society function.

## RUBBER TRADING CO.

The Rubber Trading Co., 38 Murray street, New York City, is one of the largest and the best known of the crude rubber importers of this country. Their exhibit is naturally of interest to buyers of crude rubber. The president of this company is William T. Baird, who looks after the office management, while the vice-president, Robert B. Baird is one of the best known and most popular crude rubber salesmen in the trade. Associated with the Rubber Trading Co. are Collier Baird, son of the president, and Robert L. Baird, son of the vice-president.

## THE RAW PRODUCTS CO.

The Raw Products Co. are well known successful operators in crude rubber. This business being under the management of Mr. H. W. Pety. Their exhibit is No. 214, and is the center of much interest on the part of visitors.

City, one of the most important crude rubber organizations in the world, is showing samples of crude rubber from wild and planted trees, Jelutong, crude and deresinated; gutta percha, crude and reboiled. It is probable that no exhibit at the show is being more generally visited.

## ACUSHNET PROCESS CO.

The Acushnet Process Co., New Bedford, Massachusetts, are showing an interesting line of high-grade deresinated rubbers and high-grade resins. It is probable that Phillip Endicott Young, president of this organization, will take charge of the company's stand, which is No. 102.

## NEW JERSEY ZINC CO.

New Jersey Zinc Co., stand No. 103, show a line of zinc oxides, calling special attention to their "White Seal," a new product, very white and velvety and of remarkable bulk, and certainly very pleasantly named. Lithopone is also included in the product of this company.

## TYSON BROTHERS, INC.

Tyson Brothers, Inc., Carteret, New Jersey, show a full line of rubber substitutes and exhibit articles in which their product is used. They are also showing vegetable oils, whittings and a full line of rubber chemicals. Their exhibit is No. 118.



## BURMA.

The Government of Burma, India, is represented by samples of plantation rubber from some half dozen leading estates. An illustrated booklet is also being distributed free with a full description of Burma.

## THE HAWAIIAN ISLANDS.

An interesting exhibit is that of the Hawaiian Rubber Growers' Association of Honolulu. It includes photographs and literature



WHERE THE HAWAIIAN EXHIBIT WILL BE.

illustrative of rubber cultivation and preparation, as well as samples of rubber in bulk, as shipped to market. There is further shown an assortment of intercrops, which illustrate the fertility of the islands.



THE CEYLON SECTION.

## THE CEYLON EXHIBIT.

The Hon. F. Crosbie Roles, editor of the "Times" of Ceylon, was appointed by the Governor of Ceylon to be commissioner for Ceylon at the Exhibition. Mr. Roles is well known in the United States, having been interested in the Ceylon exhibition at the Chicago World's Fair, and later occupied an official position at the St. Louis Exposition, 1904. He participated in the first World's Rubber Show at Peradeniya in 1906, and was a member of the local and London committees at the International Rubber Exhibition of 1911.

Ceylon's Rubber exhibit will be set in the center of a plantation crowded with spice trees. The commissioner has brought

a score or more of picturesquely garbed Singhalese rubber workers to New York, for the show, and with them a few Tamils from Southern India, who work on the Ceylonese rubber farms as indentured laborers.

Ceylon has gone to great expense to show New York how its rubber industry is conducted. In the center of the Imperial Ceylonese rubber exhibit, stands an ancient Singhalese temple, such as the tourist sees at Kandy. All the details of growing, gathering and preparing rubber are shown. The Singhalese growers are rivals of the Malay rubber workers from the Straits Settlements, and the two exhibits, both under British royal patronage, are being made as attractive as possible.

## THE BRAZILIAN EXHIBIT.

Perhaps the most imposing exhibit in the International Exposition, now being held at the Grand Central Palace, is that of Brazil, which covers approximately 15,000 square feet. In the center of this exhibit is a pavilion of Portuguese architecture surrounded by a terrace, on the river side of which is a panorama over 200 feet long, showing the Amazon from Pará to its termination in the Jungle, illustrating the cultivation and handling of rubber—from the plantation to the market. At the south of the pavilion is a colossal figure, the conception, by the way, of Admiral Carvalho, who, in conjunction with Dr. Dahne has been mainly instrumental in promoting the success of the Brazilian exhibit. This gigantic figure symbolizes the wonderful rubber-growing capacity of Brazil.

This figure is a recumbent giant. It is about 35 feet long, and where the head is raised on the elbow the figure stands about seven feet high. The figure reclines very comfortably, looking over the valley of the Amazon, which lies stretched out green before it, showing the great river and its tributaries and the green rubber jungles. This figure, by the way, is covered with rubber, and is called "The Genius of the Amazon."

There is a deal of information to be obtained in this Brazilian section. It has been planned with much care and every evidence of thought. There are a number of charts hung in conspicuous places giving the visitor a great many interesting facts about Brazil. From one chart, for instance, it will be learned that the exports of Brazil in the last 20 years have increased 251 per cent., while the exports of the United States in the same time have increased only 141 per cent. Rubber stands second in point of importance among the Brazilian exports—coffee ranking first, with exports amounting in 1911 to over 12,000,000 sacks (132 pounds to the sack).

Another interesting export from Brazil—of which we know little in the United States—is *mate*, their native tea. In 1910 over 6,000 tons of this product were shipped out of Brazil, going chiefly to Germany, Chile and Argentine Republic. Another product of great value consists of hides—the exports for the last year to the United States alone, amounting to 31,000,000 kilos—or being interpreted, about 68,000,000 pounds.

There are five very life-like figures in this exhibit, illustrating five great industries of the republic. One shows the rubber gatherer; another, the coffee grower; a third, the cowboy; a fourth, the miner; and a fifth, the agriculturist.

Numberless photographs add a great deal to the interest of this exhibit. There are many handsome views, for instance, of the harbor of Rio de Janeiro, the finest harbor in the world, 40 x 60 miles in size, and large enough for the combined fleets of the world.

The north side of the pavilion is devoted to Manáos and its product, and is ornamented by a large painting showing rubber production and transportation. A pyramid of Pará rubber, weighing 30 tons, surmounted by a large sphere of the same material, over 1,400 pounds in weight, is a unique and interesting feature of the exhibit.

## DR. PINTO'S CORNER.

Dr. Carlos de Cerqueira Pinto, who has a patented process

for coagulating latex, has a very interesting exhibit in the north-west corner on the crude rubber floor. He has specimens of Pará rubber coagulated in the old way, and a great many specimens of the same sort of rubber coagulated after his method, and he seems to make out a strong case for the superiority of rubber coagulated by the Pinto process. He has samples of rubber which he coagulated five years ago, which has lost none of its elasticity, strength or nerve.

#### AN ALL-RUBBER PAVILION.

One of the most interesting pavilions on the balcony floor is that of Ed. Maurer, which is composed—panels, pillars, roof,

#### BRITISH GUIANA.

While British Guiana has not an independent exhibit, an effort has been made to secure representation for the colony, by including a number of rubber samples in the "British Guiana" display of the Imperial Institute.

These samples include a seven-pound sheet of balata from Messrs. Garnett & Co.; a similar exhibit from the Consolidated Rubber and Balata Estates, Limited, and seven pounds of plantation Para biscuits from Mr. William Hodgson, of Plantation Noitgedacht, a sugar estate on the Demerara River.

Biscuits of plantation Pará from Plantation Inschen, a sugar



THIRTY TONS OF AMAZON RUBBER.

DR. LORATO, ADMIRAL CARVALHO, AND MR. MANDERS.

counters, everything that is observable—of rubber sheets. In order to give color contrast, the pillars and panels are covered with a pale yellow rubber, while the roof is covered with rubber of dark brown. It is a very striking exhibit, and incidently, quite valuable from a rubber standpoint.

#### A CLUB ROOM FOR RUBBER MEN.

In the northeast corner of the balcony floor there is a commodious room 30 x 75 feet, which is devoted to the use and comfort of the exhibitors and their friends. It is a pleasant retiring place where the exhibitor—after answering several thousand questions propounded by inquiring minds—can go and sit down in peace and quiet and get a few minutes' repose.

estate, have been sent by Messrs. Barker Brothers, McConnell & Co., Limited, while a similar exhibit has come from the Experimental Station of the Department of Science and Agriculture. Of Sapium rubber, biscuits have been sent from the Banasika Government Reserve and scrap cakes from the David Young Rubber Estate, Limited.

#### EXPOSITION NOTES.

The exhibit of the United States Rubber Co., which stands at the head of the front flight of stairs, will be beautiful by day and by night. It is to be hung with the flags of many nations. It will be lighted at night by the crystal reflection of three great

globes, a very attractive scene to meet the eye of the incoming visitor.

The booth of the Essex Rubber Co., Inc., a little to the left of the front stairway on the main floor, gives an illustration of what can be done in the way of decoration by the judicious utilization of the product of a rubber factory. Covering the top of the railing around the booth, and covering the pillars that support the roof and arranged in various designs on the front of the railing, is a fine display of the rubber tiling made by the company, both in red and white. This exhibit shows what an artistic sense is able to accomplish with material that does not seem particularly promising. In this exhibit there is a very interesting rubber tree standing about four feet high, all of red rubber, which is quite unlike anything that grows in the Amazon jungle, or in the famous 80,000 acre plantation in Sumatra. Its leaves all consist of red rubber soles neatly trimmed and ready to attach to the awaiting uppers.

#### A FINE HERBARIUM.

At the extreme left of the main floor, against the southern wall of the building, is the stand of THE INDIA RUBBER WORLD, noticeable for many things, but particularly so for several of its conspicuous features. For one, there is a big map, 15 x 20, showing



ENTRANCE TO BRAZILIAN SECTION.

the two hemispheres, so marked that they indicate what parts of the globe are reached by this publication. It will be seen at a glance what a very small part it does not reach.

Further impressing the visitor's mind with the circulation of this publication is a panel 9 x 11 feet, giving a list of the countries in which THE INDIA RUBBER WORLD is read. A panel giving a list where it does not circulate would only have to be one-twentieth part of this size, for barring the North Pole and the South Pole, and a few cannibal islands, it goes everywhere.

The two big portraits, six feet high, painted on hard rubber panels, one of Charles Goodyear, the other of his famous legal contemporary, Daniel Webster, are two other notable features of this exhibit, but perhaps the person in search of rubber information will be even more impressed by the extensive herbarium showing the various botanical specimens of rubber, and extending all around the three sides of the exhibit. There is an excellent light from the large south window, which makes it possible to

study these specimens in detail. Seven or eight large photographs of *Castilloa* trees add also to the importance of this booth.

The J. P. Devine Co. displays at the back of its space, two large panels, one giving a list of the American users, and the other a list of the foreign users of the company's machinery.

The Manhattan Rubber Manufacturing Co., the Farrel Foundry & Machine Co., and the United Shoe Machinery Co. occupy the center of the main floor under the open court that reaches up to the balcony so that these three exhibits can be viewed not only from the side but from above.

#### THE MOVING PICTURE SHOW.

In the southeast corner of the main floor there is a room partitioned off, large enough to seat probably 200 people, where every hour or thereabouts a moving picture show is given of highly interesting scenes to the rubber world. These are colored views, and show the gathering of the latex in the Amazon country and its preparation. Fine pictures are shown of Pará, Pernambuco, Bahia, Rio Janeiro, and other cities. You are taken on a trip across Brazil, from Sao Paulo, to Matto Grosso. You see the new Madeira-Mamoré railway, which recently gave Bolivia its first exit to the outer world. Pictures of the falls in the Madeira river are shown, and many other exceedingly interesting jungle scenes.

#### THE IMPERIAL INSTITUTE.

On the third, or balcony floor, in the southeast corner, the Imperial Institute of London makes a fine display of a great variety of rubber produced in the British colonies. There is rubber in sheets, in biscuits, in crepe and in balls. There are Ceara rubber, *Landolphia*, vine rubber, and specimens of *Castilloa* from the West Indies. There is also quite an extensive Herbarium of rubber botany. This exhibit is characterized by the excellence in classification and description that one would naturally expect to find in anything pertaining to the Imperial Institute.

The British-Malaya space is divided into sections, each section being allotted to a particular province, which is indicated by conspicuous signs, as, Perak, Pahang, Selangor, etc. Here are seen not only specimens of rubber, but many fine photographs illustrative of plantations in the Far East.

#### EXPOSITION NOTES.

The Philadelphia Rubber Works Co. have a large exhibit of reclaimed rubber, and are represented by their vice-president, J. S. Lohman and several other members of the company.

The Swinehart Tire and Rubber Co. are showing a full line of their solid and pneumatic tires, and also have on exhibition rubber goods made from the latex, which has been treated by a new process by the Brazilian Government, and which it is claimed is superior to the present method of treatment on account of the crude rubber being cleaner, purer and having more life. Their exhibit is No. 14.

Exhibit No. 15 is that of the "India Rubber Review," of Akron, Ohio, which is under the personal supervision of Mr. Theodore Eugene Smith.

Exhibit No. 117 is that of the American Rubber Reclaiming Co., of Germantown, Philadelphia, Pennsylvania, which is showing a varied line of reclaimed stock.

Gammeter-Brodbeck, of Akron, Ohio, operate a general agency for the distribution of rubber manufacturers' supplies—exhibit No. 120.

Muehlstein & Co. are among the prominent waste rubber firms of the country and their exhibit is attracting much attention—exhibit No. 121.



### SILVER SHIELD FOR THE BEST WILD RUBBER.

THIS illustration gives some idea of the silver shield offered by Henry C. Pearson, editor of THE INDIA RUBBER WORLD, to the individual or company making the best exhibit of wild



THE INDIA RUBBER WORLD SHIELD.

rubber at the Exposition. This cut was made from a pencil drawing, as the shield itself was not finished at the time the cut

was made. It, therefore, hardly does the design justice, but it serves to convey a general idea of its appearance. The shield is made of sterling silver, stands 15 inches high and is an exceedingly artistic piece of work. It is on exhibition at the Palace.

### CEYLON PRIZES FOR RUBBER IN 1906.

WITH reference to the pioneer rubber exhibition at Ceylon in 1906 (referred to in another column), it is of interest to recall the chief awards on that occasion.

#### COMPETITION FOR CEYLON ONLY.

*Pará Rubber Biscuits*; (46 competitors), gold medal, Duckwari Estate; silver medal, Katugastota.

*Pará Biscuits, smoked*; gold medal, Arapolakande.

*Pará Rubber Sheet*; (23 competitors), gold medal, Syston; silver medal, Kindsalle.

*Pará Rubber, Crepe or Lace*; (4 competitors), gold medal, Culloden; silver medal, Heatherley.

*Pará Rubber, other forms*; (7 competitors), gold medal, Gikiyanakande; silver medal, Culloden.

#### COMPETITION FOR CEYLON AND ABROAD.

*Pará Rubber Biscuits*; (8 competitors), gold medal, Duckwari; silver medal, Arapolakande.

*Pará Rubber Sheet*; (13 competitors), gold medal, Syston; silver medal, Kondsalle.

*Pará Rubber Crepe or Lace*; (10 competitors), gold medal, Culloden; silver medal, Pataling.\*

*Pará Rubber in other forms*; gold medal, Lanadron,\* (block); silver medal, Gikiyanakande.

*Pará Rubber Scrap*; (32 competitors), washed—silver medal, Vallambrosa.\* Hand made—gold medal, Heatherley; silver medal, Kepitigalla.

\*Denotes Malayan or Straits exhibitors.

### THE HAWAIIAN COMMISSIONERS.

The Hawaiian Islands are comparatively newcomers in the rubber producing world. The Hon. William Williamson, and Wilbur A. Anderson are the official commissioners from the Islands to the Exposition.



F. CROSBIE-ROLES.



HON. WILLIAM WILLIAMSON.



WILBUR A. ANDERSON.

## Who's Who at the Rubber Show.

**W**HILE of course the exhibits of what people are going to the Exposition to see—the manufactured goods, the machinery used in manufacturing these goods, the crude rubber that is the foundation of the whole industry, and various compounds without which the crude rubber would be of no avail—still the personnel of the Exposition is certainly not devoid of interest.

**PRESIDENT WILLIAM H. TAFT, PATRON OF THE EXPOSITION.**

The patron of the Exposition is William H. Taft, who for the last three and a half years has been president of the United States, and who, according to his campaign manager, Charles

official position rendered it impossible for him to be in New York City on the 23d, and Mayor Gaynor kindly accepted an invitation to make the opening address in the Governor's place.

**MAYOR WILLIAM J. GAYNOR, WHO OPENS THE EXPOSITION.**

While Mr. Gaynor has only a local political position, being Mayor of the City of New York, his fame is national, it might properly be said international, the result not only of the importance of his position as the ruling spirit of the second largest city in the world, but even more the result of his unique and forcible personality. He is possibly the most picturesque citizen in a public position that we have produced in this country since An-



PRESIDENT WILLIAM H. TAFT.



GOVERNOR JOHN A. DIX.

D. Hilles, will continue in that difficult but desirable position up to the 4th of March, 1917. Mr. Taft had hoped to be present at the opening exercises and to take part in that interesting event but, unfortunately, the President is often a victim to his duties, and he was compelled to remain in Washington just at this particular time. He expects, however, to pay the Exposition a visit during its ten days of duration. Just when this pleasing event will occur cannot be stated at this time, but will be properly announced.

**GOVERNOR JOHN A. DIX, PRESIDENT OF THE EXPOSITION.**

The President of the Exposition is Governor John A. Dix, chief executive of the great state of New York. Aside from his political prominence, there is great propriety in having Governor Dix officiate in this capacity, because prior to his advent on the political stage he was known as a business man of large interests and conspicuous success. It is, therefore, quite fitting that he should have a prominent part in any notable commercial function in this state. Governor Dix, when he assumed the presidency of the Exposition, fully expected to be present on the opening day and deliver the inaugural address, but the exigencies of his

drew Jackson, known in his day as "Old Hickory." The willingness of the Mayor to deliver the opening address is most fortunate, because he is at his best in his speechmaking—being full of wise saws and modern instances. But as the Mayor is much given to impromptu speaking it was impossible for this publication to secure his address in advance, but there is every assurance—from past experiences—that it will be well worth hearing.

**HENRY C. PEARSON, VICE-PRESIDENT OF THE EXPOSITION.**

Henry C. Pearson, vice-president of the Exposition, and president of the Conference to be held jointly with the Exposition, hardly needs an introduction to the readers of this journal, which he founded twenty-four years ago, and of which he has been editor continuously ever since. It is safe to say that no one has done more to disseminate rubber information all over the world than the editor of this paper. He has traveled extensively in rubber countries—both in the wild rubber regions of South America and in the plantation districts of the Far East—and has written a number of books giving the result of his experiences and observations.

Mr. Pearson presided at the initial function of the Exposition—

the private view, with an incidental luncheon, given to the members of the press—and he will preside at the various meetings of the Rubber Conference.

**A. STAINES MANDERS, THE ORGANIZING MANAGER OF THE EXPOSITION.**

But after all is said and done, and after the enumeration of the important officials whose names have been mentioned above, the power behind the throne, the originator and creator of this

**THE BRAZILIAN COMMISSION.**

The Government of Brazil—to say nothing of the several provinces and various commercial organizations in that country—has sent a large number of distinguished delegates to the Exposition. The officers of the commission are as follows: Count Candido Mendes de Almeida, president; Admiral Jose Carlos de Carvalho, vice-president; Dr. Eugenio Dahne, general secretary.



A. STAINES MANDERS.



MAYOR WILLIAM J. GAYNOR.



MISS D. FULTON.

Exposition, is A. Staines Manders, organizing manager. His mind conceived it and his tireless industry has made it possible, and has filled the three great floors of the Grand Central Palace with rubber exhibits from the four quarters of the globe. Mr. Manders is an Australian by birth, an Englishman by citizenship, something of an American by reason of several visits to these shores, and a citizen of the world by reason of the breadth of his activities. He promoted and carried to a successful issue the first International Rubber and Allied Trades Exposition in London in 1908. This was voted so interesting, so instructive and so stimulating to the whole rubber industry that he was requested by rubber interests to repeat the exhibition three years later; and in July, 1911, he brought about the second international rubber show in London, four times as large and complete and successful as the first. And now he has afforded to this country and to the rubber interests of the Western Hemisphere an opportunity to enjoy their first experience of a large and comprehensive rubber Exposition conceived on broad lines, and built on the experience and knowledge acquired in the two London shows.

**MISS D. FULTON, SECRETARY OF THE EXPOSITION.**

As has been said above, Mr. Manders has been and is the driving force of the Exposition, but the one who holds the guiding reins is Miss Fulton, his secretary. She is a young Englishwoman, the niece of Mr. Manders, who acted as his secretary on the occasion of the two London shows held in 1908 and 1911. She knows, by correspondence at least, everybody in the rubber world—who he is, and what he is doing, and how much of it he does; whether he gathers rubber, grows rubber, or makes it up into the finished product. She has all the rubber people on the globe arranged, classified and systematized. Her knowledge of the rubber trade is encyclopedical, and better than that, no matter how busy she may be with her multitudinous duties, she is always willing to contribute from her store of knowledge to the earnest inquirer after rubber information.

The commission includes the following members: Jayme de Argollo, commissioner for the State of Bahia; Dr. J. Cardwell-Quinn, commissioner for the State of Minas Geraes; George E. Pell, commissioner for the Commercial Association, Pará; A. W. Stedman, commissioner for the Commercial Association of the State of Matto Grosso; Dr. Manuel Lobato, commissioner for the State of Amazonas, the Federal Territory of Acre, and Matto Grosso; J. Levy, commissioner for the Commercial Association of Amazonas.

The following are among the distinguished visitors from Brazil: Raymundo C. Monteiro da Costa, Manãos; M. Pio Corrêa, Rio Janeiro; Dr. Jacques Huber, Pará; W. S. Gordon, Manãos; Dr. Carlos de Cerqueira Pinto, inventor of a smokeless process for curing rubber.

Dr. Dahne when interviewed by a representative of one of the daily papers, made the following interesting statement:

"Our government naturally takes the very greatest interest in the exhibition. Rubber is second in importance of our natural products, being surpassed only by our coffee. We expect to have about eighty tons of crude rubber in different stages of production and of different varieties. The government has sent up experts in the treatment of crude rubber to demonstrate improvements we have made and to confer with American manufacturers as to possible ways in which our product might be made more serviceable."

Count Candido Mendes de Almeida and Admiral Carvalho, after the expiration of the Exposition expect to make a tour of the manufacturing cities of the East, together with other members of the International Congress of Chambers of Commerce, recently held in Boston. Later Admiral Carvalho and Dr. Dahne will go to San Francisco to choose sites for the Brazilian buildings of the Panama Exposition. After that, the Admiral will proceed to the Canal Zone to look over the great engineering works at that point; for the opening of the Canal will be a matter of tremendous importance to Brazil. The

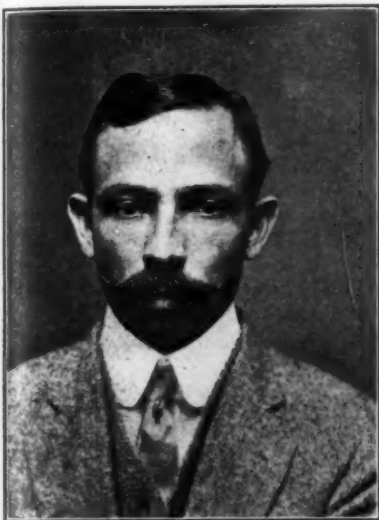


Admiral, by the way, has served more than 50 years' in the Brazilian Navy.

Count de Almeida is part owner of the "Jornal do Brazil," is a director of the Commercial Museum of Brazil, and occupies

Edward G. Salmon, commissioner for the Imperial Institute, London, England.

C. E. S. Baxendale, representing the Planters' Association of Federated Malay States.



DR. MANUEL LOBATO.



ADMIRAL JOSE CARLOS DE CARVALHO.



DR. EUGENIO DAHNE.

one of the important chairs in the School of Law in the University of Brazil. He is accompanied by his wife and six children.

#### COMMISSIONERS TO THE RUBBER EXPOSITION.

Among the commissioners from foreign countries are the following:

#### BRAZIL'S BRIGHT RUBBER OUTLOOK.

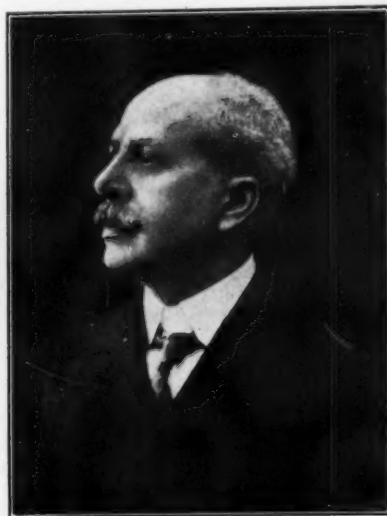
The wonderful awakening of Brazil in regard to the development of her vast rubber resources, as indicated by the decrees and regulations recently passed by the National Congress, is commented on at some length on the editorial pages of this issue. The impressive exhibit made by Brazil at the Exposition is an-



GEORGE E. PELL.



LEONARD WRAY.



PEDRO DE TOLEDO.

Leonard Wray, I. S. O., commissioner for the governments of British Malaya and Straits Settlements.

F. Crosbie Roles, commissioner for the Government of Ceylon.

Dr. Walter Strong, commissioner for the Province of Moro, Philippine Islands.

The Hon. William Williamson, commissioner for the Hawaiian Islands.

other indication that the great southern republic does not intend to lose her dominance in the rubber world if energy and enterprise can prevent it.

There are more rubber men in New York this week than ever before gathered together in any American city. Some come to show, but more come to be shown.

## The Brazilian Dinner.

THE beginning of the functions that always attend so great an exposition as that of the International Rubber, was the Brazilian dinner given on the evening of the 7th of September, the "Fourth of July" of the Republic of Brazil, to celebrate the 90th anniversary of the Declaration of Independence of Brazil from Portugal. The Roof Garden of the Hotel Astor was the place chosen for the banquet. The guests were the members of the Brazilian colony of New York, the officers of the International Rubber and Allied Trades Exposition, and the Brazilian delegates to the exposition.

The repast was such as would have been approved by the most critical epicure. Toasts and speeches were both in English and Portuguese. Dr. Eugenio Dahne, the Brazilian Commissioner,

Dr. Manuel Jacintho Ferreira da Cunha, Consul General of Brazil, and the following members of the Brazilian Consulate: Dr. Garcia Leao, George W. Chester, Victor Ferreira da Cunha, James G. Mee, Adry Werneck and Aluisio Martins Torres.

Dr. Manuel Lolato, Special Delegate of the Governor of the State of Amazonas to the International Rubber Exposition; Dr. Carlos Cerqueira Pinto, Dillwynn M. Hazlett, Candido Mendes de Almeida, Baron de Suassuna, Member of Congress, Brazil; Jose Marcal, journalist, and Dr. Victor Resse de Gouvea.

The following American guests were present: A. Staines Manders, Director-General International Rubber Exposition; Henry C. Pearson, Vice-president International Rubber Exposition, Editor INDIA RUBBER WORLD; E. G. Unitt; William H.



BANQUET OF THE BRAZILIAN COLONY OF NEW YORK, HOTEL ASTOR.

acted as toastmaster. The speakers were Count Candido Mendes de Almeida, Admiral Jose Carlos de Carvalho, Henry C. Pearson, A. Staines Manders, William H. Ukers, and many others.

The guests, some of them accompanied by their wives, were as follows:

Dr. Eugenio Dahne, Commissioner-General, representing the Minister of Agriculture, Industry and Commerce in the United States and Canada.

Count Candido Mendes de Almeida, Director of the Commercial Academy and Commercial Museum at Rio de Janeiro, President of the Brazilian Commission to the International Rubber Exposition, New York, and to the International Congress of Chambers of Commerce, Boston, Chief Editor of the "Jornal do Brazil" and "Revista da Semana," Rio de Janeiro.

Admiral Jose Carlos de Carvalho, Brazilian Navy, Member of Congress, Vice-president of the Brazilian Commission to the International Rubber Exposition, New York.

Ukers, Editor "Tea and Coffee Trade Journal"; Dr. Algot Lange; C. A. Green; E. W. Hiscox, and A. B. Lukens.

### NOISELESS STREETS.

Efforts are being directed to make rubber pavements non-slipping, and this subject is receiving attention at the Exposition. Mr. Manders has expressed the conviction that with the aid of the American inventor, he will overcome this obstacle. At no distant date, it is expected, the streets of New York and other large cities will become silent and without becoming slippery.

As the "Morning Post," one of the leading London dailies, remarks: "There is a prospect that the day may come, when streets will be paved with rubber, so that the noise and vibration of traffic, which render life in a modern town so disagreeable, will be almost banished."

## The Third International Rubber Conference.

### PROGRAMME OF EVENTS.

THE Third International Rubber Conference will be held in the Grand Central Palace, on Lexington avenue between Forty-sixth and Forty-seventh streets, New York, from September 24 to September 30, 1912. The Executive Committee has made the following announcement, not only covering the object of the Conference and its general organization, but giving the schedule of the various meetings, together with the names of those who will take part and the subjects which they will discuss. Their announcement is as follows:

**Purpose of the Conference.**—This Conference has been called for the purpose of promoting knowledge of crude rubber and rubber products.

**Membership.**—Membership in the Conference may be obtained

"Possible Rubber Producers in the Temperate Zone," by Mr. Charles P. Fox, Akron.

"Some Effects of Acclimatization Upon Guayule. *Parthenium Argentatum*," by Francis E. Lloyd, Montreal, Canada.

"The Smokeless Method for Coagulating of Rubber," by Dr. Cerqueira Pinto.

Wednesday, September 25, at 10 a. m.:

"Problems in Vacuum Drying," by Mr. J. P. Devine.

"Manufacture of Dipped Goods," by Mr. T. W. Miller.

"Physical Methods of Testing Rubber and Rubber Products," by Mr. P. L. Wormeley, Bureau of Standards, Washington.

"Factory Management and Organization Methods," by Mr. J. C. Jurgensen (President of the Institute of Operating Engineers), and Mr. Frederic Dannert (consulting chemist).



DR. FREDERIC DANNERT.



HENRY C. PEARSON.



CYRIL E. S. BAXENDALE.

by registering with the secretary on or before September 24, 1912. Registration cards and numbers will be assigned in the Exhibition Hall at the New Grand Central Palace on and after September 23, 1912. All persons or corporations interested in the production of crude rubber, the manufacture of rubber goods, and the testing of these materials are eligible for membership. Delegates are asked to announce their connections when registering.

**Meetings.**—Meetings will be held in the mornings beginning at ten o'clock; in the afternoons beginning at two o'clock, and in the evenings at eight o'clock. The evening meetings will be held in those cases where the afternoon business has remained unfinished.

**Technical Committees.**—The work of the Conference will be done through committees who will be asked to present reports and recommendations at the final meeting.

### SCHEDULE OF MEETINGS.

Tuesday, September 24, at 2 p. m.—An address of welcome by the president, Mr. Henry C. Pearson. The topic for discussion will be "Crude Rubber." Special papers:

"Rubber Contracts," by Mr. Arthur W. Stedman.

"The Plantation Industry," by Cyril E. S. Baxendale, Esq., of the Federated Malay States.

"Various *Manihots* Producing Rubber in the Central States of Brazil," by Dr. J. Santiago Cardwell-Quinn, Commissioner.

Thursday, September 26, at 10 a. m.:

"A Brief History of Fire Hose Specifications," by E. A. Barrier.

Topical discussion on specifications (mechanical rubber goods for railroads, Federal and Municipal Governments), including as sub-topics: Air brake hose, railroad steam hose, fire hose, navy packings and steam packings.

"The Commercial Possibilities of Synthetic Rubber," by Mr. L. E. Weber, Boston, Mass.

Friday, September 27, at 10 a. m.—A report of the transactions of the Navy Conference at Washington, December, 1911, by Mr. E. S. Land, U. S. N. Topical discussion on specifications: (a) Materials for insulated wire; (b) Textile materials (sheeting, duck and yarns).

A preliminary report of activity by the "Railroad Committee" on "Standard Methods of Testing Rubber Products."

At this meeting the Rubber Section of the American Society for Testing Materials will be represented by Mr. E. B. Tilt, of Montreal, and the Rubber Section of the American Chemical Society will be represented by Mr. D. A. Cutler, of New York.

At 7 p. m.—Informal dinner for rubber chemists and engineers. (Place to be announced Friday morning.)

Saturday, September 28, 10 a. m.—Meeting for the presentation of resolutions and recommendation of official methods for physical testing and chemical analysis of crude gum and manufactured rubber goods.



A considerable number of topics for discussion have been forwarded to the secretary by manufacturers, as well as consumers of rubber goods. These will be presented on the appropriate days.

#### SOCIETIES REPRESENTED.

The following societies will be represented by official delegates:

American Chemical Society.  
American Society for Testing Materials.  
Society of Chemical Industry.  
American Institute of Chemical Engineers.  
German-American Technical Society.  
Institute of Operating Engineers.

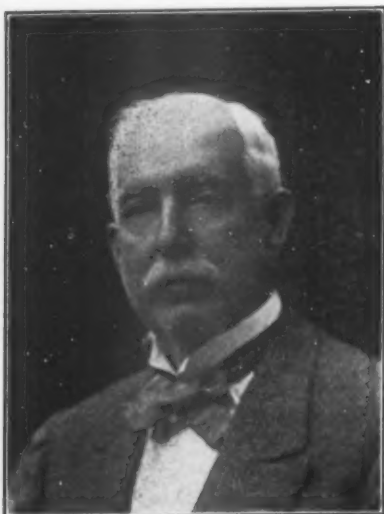
The following bureaus and Government departments will be represented by delegates:

U. S. Department of War.

Washington, D. C.; D. A. Cutler, New York; Dr. Lothar Weber, Boston, Mass.; Dr. W. C. Geer, Akron, Ohio; D. S. P. Sharples, Boston, Mass.; Dr. Eugenio Dahne, Brazil; C. E. S. Baxendale, Esq., Federated Malay States; F. Crosbie-Roles, Ceylon; A. Staines Manders, London; Leonard Wray, Imperial Service Order, Federated Malay States.

#### RUBBER TICKETS FOR THE RUBBER SHOW.

Any ticket issued by the management and properly authorized will take the recipient into the Rubber Exposition; but George A. Alden & Co., of Boston, have issued a special ticket for the Exposition that is so distinctive that the man who receives one will certainly be loth to give it up at the gate, as it would serve as a



DR. CERQUEIRA PINTO.



A. W. STEDMAN.



F. W. MILLER.

U. S. Department of Commerce and Labor.

U. S. Department of the Interior.

U. S. Isthmian Canal Commission.

The Official Material Testing Bureaus of the principal foreign Governments.

The Factory Mutual Laboratories of Boston, Mass.

The following Governments will be represented by official delegates:

Federal Government of Brazil.

Federated Malay States and Straits Settlements.

Ceylon.

Hawaiian Islands.

Province of Moro, Philippine Islands.

Burma (India).

The State of Amazonas (Brazil).

The State of Matto Grosso (Brazil).

The State of Para (Brazil).

The State of Acre (Brazil).

The State of Minas Geraes (Brazil).

Bolivia.

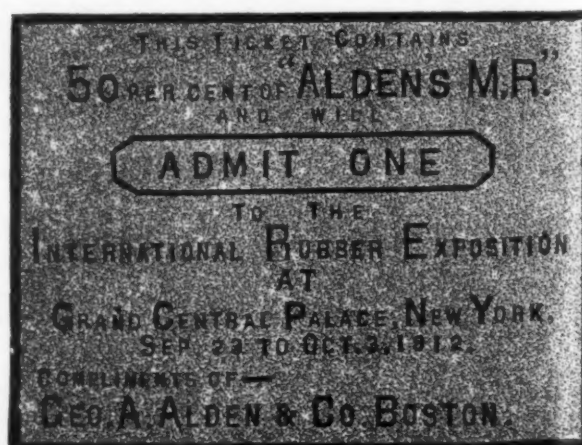
Republic of Honduras.

State of Bahia (Brazil).

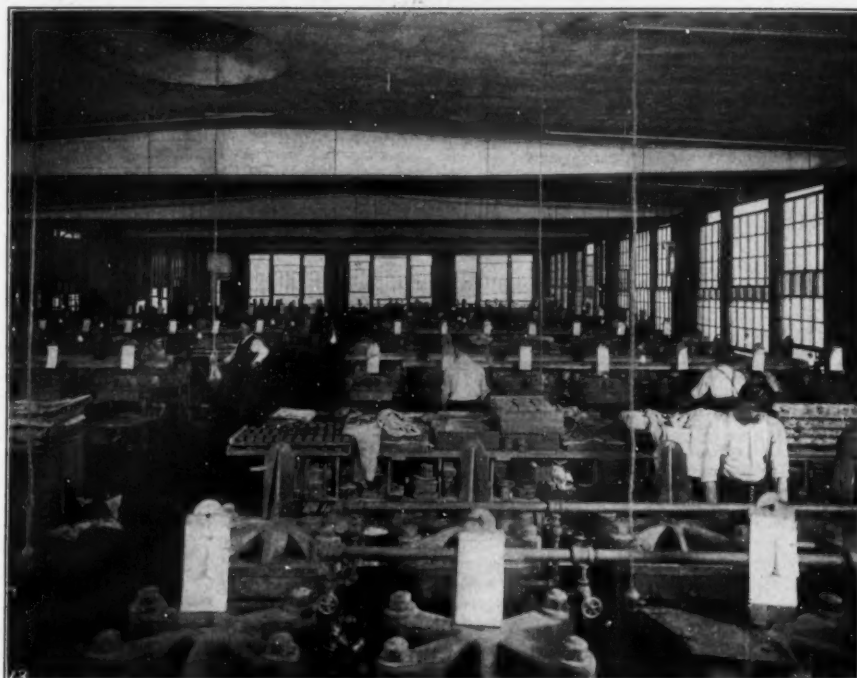
The president of the Conference is Henry C. Pearson, New York; and the honorary secretary, Frederic Dannerth, Ph. D.

The Executive Committee is as follows: E. S. Land, U. S. N.,

fine permanent souvenir of that event. In issuing these to their friends Messrs. Alden & Co., remark: "This being a rubber exhibition, a rubber ticket seems more in keeping than one of mere



cardboard; and as our "M. R." improves and strengthens all grades of rubber, we have put in enough of it to demonstrate its remarkable properties as a compounding ingredient."



A view of a portion of our Molded Goods Department.

# Goodrich Molded Goods

There is no rubber factory in the world so comprehensively equipped to turn out molded goods as this department of our business. We have our own machine shop, which is devoted to making molds for this class of work, and customers receive the benefit of these facilities and our extensive experience in proper and economical mold construction.

*We are always glad to submit prices and samples, whether  
the article is new or already in use.*



**THE B.F. GOODRICH CO.**  
AKRON, OHIO, U.S.A.



**NEW YORK BELTING & PACKING CO. LTD**

**ORIGINAL MANUFACTURERS**

**INTERLOCKING RUBBER TILING.**

**IT IS THE BEST FLOOR MADE  
FOR CHURCHES, SCHOOLS, BANKS, PUBLIC BUILDINGS,  
THEATRES AND PRIVATE RESIDENCES, BEING SANITARY,  
NON-SLIPPERY, SOFT AND COMFORTABLE TO THE TREAD,  
BEAUTIFUL IN COLORS AND DESIGNS AND DURABLE.**

NEW YORK 91-93 CHAMBERS ST.  
ST. LOUIS MO. 218-220 CHESTNUT ST.  
SAN FRANCISCO CALIF. 129-131 FIRST ST.  
SPokane, WASH. 165 S. LINCOLN ST.  
PORTLAND ORE. 40 FIRST ST. LONDON, ENGLAND, 11-13 SOUTHAMTON ROW,

CHICAGO, ILL. 130 WEST LAKE ST.  
PHILADELPHIA, PA. 821-823 ARCH ST.  
BOSTON, MASS. 232 SUMMER ST.  
PITTSBURGH, PA. 420 FIRST AVE.

ECCE SIGNUM.



## THOROUGHLY RELIABLE.

The policy of furnishing only the finest goods that can be produced with perfect materials, latest and best machinery, and highly skilled workmen of long experience, has been, is now, and will continue to be, the policy of

## The Mechanical Rubber Company,

CHICAGO, ILL.

Branch Store, No. 1810 Blake Street, Denver, Colo., where we carry a full line of goods.

Manufacturers of all kinds of rubber goods for mechanical uses—Hose, Belting, Packing, Gaskets, Bicycle Tires, Specialties, Moulded Goods, Etc., Etc.

If you are unable to satisfy your trade with goods you are supplying,  
If you are in search of good goods at fair prices,  
If you cannot get quick deliveries,  
If you are not getting fair value for your money,  
IN ANY EVENT,

SEND TO US FOR SAMPLES AND  
QUOTATIONS.  
WE CAN SUIT YOU EVERY WAY.

FACTORY, GRAND AVE. & ROCKWELL STS

**THE MECHANICAL RUBBER CO., 230 Randolph St., Chicago, Ill.**



## THE RUBBER TRADE IN AKRON.

*By a Resident Correspondent.*

THE Adamson Machine Co. is extending its present machine shop 240 feet, giving a total machine shop length of 480 feet, two stories high, equipped with modern machinery and machine shop conveniences. The company expects to occupy this plant completely by November 1. Mr. Adamson has recently been granted a patent on a hose mold, curing 500 feet or more at a single operation.

This company will be represented at the New York Rubber Exposition by its secretary and treasurer, R. B. Koontz. Mr. Adamson, the president, will be there part of the time. The present shop is crowded with work for rubber manufacturers—not only American, but English, Continental and other foreign concerns.

The Swinehart Tire and Rubber Co. has offered \$150,000 worth of treasury stock to stockholders. Each stockholder will be allowed to take an amount equal to 23 per cent. of his present holdings. This offering is subject to the action of a meeting of the directors at their regular stockholders' meeting to be held September 25. The notice reads, "This action is made necessary by the company's inability to take care of the volume of business with its present capital." The quarterly dividend was reduced from 2 per cent. to 1½ per cent. in anticipation of the increased stock.

The Goodyear Tire and Rubber Co. plans to increase its auto tire output and working force 60 per cent. within the next year. It has under construction a new six-story factory building 80 x 400 feet, and an addition of two stories to another factory building. It is stated that the approximate cost of these improvements will be \$300,000. It is expected that these buildings will be ready for occupancy by next spring. This will increase the working force two or three thousand, which means an increase in Akron's population of four to six thousand. F. A. Seiberling, president of this company plans to take care of the new employes by building houses on 300 acres, comprising several farms, which he has purchased just east of Blue Pond. It is expected that 100 houses will be built on the land at once as an experiment. The employes will be given the privilege of allowing the rent to apply on the purchase price of the home.

Mrs. Mary Perkins, widow of Simon Perkins, lately deceased, and one of the heaviest stockholders of the B. F. Goodrich Co., has given their old homestead located at the corner of Perkins and Prospect streets to the Association for the Aged, to be used as a temporary home until a permanent structure can be built by the association. C. B. Raymond will act as trustee of the property until it is turned over to the association. It is believed that the gift will place the organization on a permanent basis. Although it was founded several years ago, the trustees through lack of funds have never been able to start the construction of buildings on their property. A number of years ago, Mrs. Louisa Sumner died, leaving a farm of 80 acres located on high ground overlooking the city to the Board of Trustees to be used for a home for the aged. Mrs. Dr. Milligan, Mrs. Henry Robinson, F. A. Seiberling, Frank Adams and a few others have been very active, and by contributions and other means have preserved this excellent location for the purpose desired by the donor.

On account of the increased railroad traffic out of Akron, caused by the enormous enlargement of the various rubber companies, the Erie Railroad Co. this coming season expects to spend \$400,000 to remodel the large yards south of Exchange street and the 40 acre property which it lately bought in Kenmore. Mr. Dunkel, general superintendent of this company said, "We fully realize that we have not kept pace with the growth of Akron. We also realize that Akron is one of the best cities in the State

and has shown more growth during the past few years than any other city in the State." Vice-President Stewart of the Erie was in town last week and expressed surprise at the city's growth, and promised the above improvements. The Kenmore property will be developed into new yards. This will give the company a side track extending clear into the city, and will relieve the main track. It will also relieve the shippers by the building of side tracks leading to many of the larger factories.

The work on the Akron-Youngstown road is being pushed rapidly from Mogadore to the city of Akron. It is expected that this will be completed during the first half of 1913. This, when completed to Mogadore gives the manufacturers of East Akron another outlet and connects closely with the Wabash. It is believed by many that this new road will be controlled and operated by the Northern Ohio, one of the Lake Shore tributaries.

Last summer the Baltimore and Ohio Railroad Co. bought 40 acres of land along its line just north of Akron, which it expects to develop into new yards to facilitate its Akron trade.

The Cleveland, Akron & Columbus Railroad Co., one of the Pennsylvania lines, has, within the last few years, bought most of the land bounded by Mill, Prospect, East Market streets, and the Pennsylvania railroad lines, and has more than quadrupled its capacity for handling Akron freight. It contemplates within the next few years, building a large new office building for the head offices of the company.

The Akron division of the Philadelphia Rubber Works Co. is increasing its capacity by erecting additions to its present buildings.

A. H. Noah, former treasurer of the Diamond Rubber Co. has donated to the boys' camp of the Akron Young Men's Christian Association funds to help buy Cottage Grove, a summer resort located on the East Reservoir, six miles from Akron. The site consists of 11½ acres, with 1,156 feet of water front. The equipment to date consists of two tennis courts, a ball ground, three private cottages, bathing beach, large pavilion (the second floor of which is used for sleeping rooms, and the first floor for dining room and kitchen), one launch, steel boats and fishing boats. The camp will be used all the year round and cottages are being equipped with heating apparatus, so that the boys can take "hikes" there, in the winter and remain overnight. Mr. Noah says, "I think that the idea of boys having their recreation together is one of the best plans that can be arranged. There is nothing that will rub the rough spots off the boys more than to meet one another in play and endeavor. All of us have a dirty streak in us somewhere, and there is nothing better in the world to eradicate this streak than to associate with a bunch of clean-cut boys. I think that although any recreation is beneficial, outside recreation is the best, for it strengthens character and body, and these two are in as much need of development as is the mind.

"I am very well pleased with the uses to which the camp has been put, and am equally as well pleased with the bunch of boys who are using the camp. My hope is that when they grow older, they will see it as much their duty to aid the coming generations with either their physical, moral or financial support as we who are here now have done."

B. G. Work, who has been in Europe for some time, overseeing the building of The B. F. Goodrich plant at Colombes, France, has returned home.

Miss Irene Seiberling, daughter of F. A. Seiberling, president of the Goodyear Tire and Rubber Co., had a thrilling experience Saturday night, September 7, when a negro burglar, entered their home at 158 East Market street after the family had retired. Miss Seiberling awoke to see a man crawling on his hands

and knees within a few feet of her bed. She demanded what he was doing there. The negro made no response. She ordered him out of the house and with that, took after him. After chasing him out, she notified the other members of the family.

C. W. Seiberling, vice-president of The Goodyear Tire and Rubber Co., is having plans made for a new residence to cost \$80,000. W. W. Sabin, Cleveland architect, has the plans in hand. It will be a two-story brick and stone structure in Colonial style.

O. C. Barber has just returned from an extended European trip.

F. A. Seiberling, president of the Goodyear Tire and Rubber Co., has returned from his vacation at the Cheneaux Islands. Mr. Seiberling has planned a magnificent home and a large estate at the northern end of Portage Path, the plans of which are being rapidly completed. To secure his ideal Mr. Seiberling has made an extensive trip through Europe and has carefully studied the various estates, manners and homes of Europe.

L. C. VanVever, of the same company, sailed for England on Sept. 3, to open an English branch and later to open a branch in France and each of the other countries of Europe, and as soon as these branches are fully completed, the foreign possessions of the various European countries will be exploited. It is the plan of the company besides establishing a branch in each one of the leading countries, to establish distributing systems radiating from the central branch of each country.

The new office building of the Goodyear company is completed and occupied. The main floor is used exclusively for executive offices, those of the president, vice-president, secretary and other executive officers being finished in solid mahogany. The remainder of the offices are finished in golden oak paneling. The entrance hall is elaborate and finished in oak. These afford spacious quarters for all departments.

In order to better cope with the rapid increase in business, the Goodrich company has built a factory at Colombes, near Paris, France. The company runs a touring bureau and furnishes reliable information concerning foreign tours free of charge.

It is estimated by Akron rubber men that the output of the Akron factories for the year of 1912 will exceed that of 1911 approximately 25 per cent.

#### THE NEW BRAZILIAN LEGISLATION.

It will be recalled that a decree was signed on January 5 last, by the President of the Republic of Brazil, by which various important measures were sanctioned for the benefit of the national rubber industry. A full extract of the decree appeared in *THE INDIA RUBBER WORLD* of June, 1912 (p. 427).

Since then the Brazilian Ministry of Agriculture has issued a series of regulations intended to put into effect the provisions of the decree. An English translation of both the decree and the regulations has been published by the Brazilian Government. It contains amongst other points, the regulations affecting the free entry of machinery, chemicals and other requirements of the rubber industry, of which the booklet contains a full list.

The regulations for experimental stations, rubber refinery and manufacturing establishments are likewise given at full length.

The Inter-Continental Rubber Co. on September 30 paid a quarterly dividend of 1½ per cent. on its preferred stock, to holders of record September 20.

#### THE RUBBER TRADE IN CINCINNATI.

*By a Resident Correspondent.*

THE season of 1912 just closing will mark one of the greatest, if not the greatest, in point of business for local branch houses of the various rubber tire manufacturers in their history. For years this city has been looked upon by the tire manufacturers as an unprofitable city in which to open branch houses, as it was the general opinion that the automobile would not become a necessity, but would remain a luxury on account of the steep hills surrounding the city. These opinions were not well founded, and about the first to see the possibilities of this city as an automobile tire center were the Diamond and the Goodrich companies, which installed branch houses at a big expenditure. It did not take long for other manufacturers to follow these two companies and today the Commercial Club, and other civic organizations boosting trade for the Queen City never fail to call attention to the prominence of Cincinnati as an automobile tire center. Local agents for the various manufacturers are enthusiastic in their expressions of trade for next year and already many improvements are being considered to take care of the expansion of trade that is looked for in 1913.

The Ohio Retail Shoe Dealers' Association, which held its annual convention in Dayton, Ohio, early in September, has practically declared war upon the "fabric" footwear, especially on shoes made of cravenette cloth. Footwear of cloth and similar materials, it was said, "comes into being with the rising of the sun and ceases to be fashionable by night." Such styles were regarded as a source of trouble and expense. The association renewed its fight against the so-called trust manufacturing rubber footwear, and the committee having in charge the matter of financing a co-operative company to manufacture rubber footwear reported to the convention that plans were about perfected to launch a co-operative company in the near future. Fraudulent advertising, discounts and mail-order houses were assailed, and will be the objects of a relentless pursuit by the dealers from now on.

Coughlin & Davis, local agents for the Morgan & Wright Co., received an order the other day from a Southerner of pronounced political views. His letter containing the order follows:

"Nashville, Tenn., August 31, 1912.

"Coughlin & Davis, Cincinnati, Ohio.

"Gentlemen: Please send us the following tires:

"One 34 x 4 Nobby Tread, M. & W. Q. D.

"One 33 x 4 Nobby Tread, M. & W. Q. D.

"One 33 x 4 Round Tread, M. & W. Q. D.

"One 34 x 4 Inner Tube.

"Please see that we get Woodrow Wilson tires, as we don't care for the G. O. P. or Bull Moose. Very truly yours,

"EVERETT PHILPOT & Co."

The defeat of one of the Constitutional Amendments to the Constitution of Ohio, voted on by the people September 3, which provided for the issuance of a \$50,000,000 bond issue for good roads in the State of Ohio, was keenly felt by local representatives of the tire manufacturers. While Ohio has been expending in the last few years sums in improving the various important highways of the State, yet good-roads experts say that at the rate of improvement it will be years before Ohio will have good roads in all sections of the State, and the proposed amendment was passed by the Constitutional Convention for the purpose of giving the Legislature authority to pass laws for a bond issue that would provide funds for improving the roads immediately. Local tire men say that the condition of many roads in Ohio is directly responsible for the major portion of complaints that come to them by automobile owners who complain of the life of tires.

## THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

**B**USINESS in rubber, and its manufacture, is enjoying the same prosperity which seems to be vouchsafed to all other lines of industry. The consumption of automobile tires continues unabated, and the motor section of Boston, Boylston street, Massachusetts and Commonwealth avenues—is busy in spite of the general dilapidation and disorder of the former street, where traffic is terribly constricted, because of the construction of the new subway. Automobile dealers and supply houses report excellent business, even with these drawbacks.

The mechanical business has been and is good. Belting and kindred lines are in excellent demand, and even though the summer in New England has affected the domestic demand for hose, other lines—industrial and fire hose—have sold well; and even now orders are coming in most satisfactorily for 1913 delivery. The rubber clothing business is good. Salesmen now out are cautioned not to promise deliveries for six weeks or two months on orders taken now. Rubber footwear is now waiting for early fall storms, before many more orders are likely to be received, but the mills have orders enough on hand to advertise for makers right along in the "Help Wanted" columns.

\* \* \*

The new Administration Building of the Hood Rubber Co., which has just been completed and occupied, is a model office business structure, and the move of the company in the placing of their business offices and the factory close together is one which is working out most advantageously. This building is a substantially built four-story edifice of reinforced concrete. In fact it is concrete from top to bottom, all the floors and roof, as well as the walls, being of this fire-resisting material.

A walk through the building is one which will give the visitor a good idea of its substantial character. The entrance opens into a roomy lobby furnished with oak tables and chairs. Hence the visitor is conducted to the desired department with the least loss of time.

On this floor are the main offices, all connected with a rubber carpeted corridor, each office enclosed with oak partitions and frosted glass. First is that of the Advertising Department, in charge of Mr. Kimball. Then come the three sales offices, that of Mr. Aldrich, the manager of sales, and those of Mr. Rice and Mr. Dailey, selling agents, the corner office being occupied by Mr. Mason, manager of footwear manufactures. A long aisle running from here to the back of the building separates the handsomely furnished sample room and the large Stenographic Department from the private offices of the Auditing Department, the tire salesroom, while Mr. F. C. Hood, general manager of the company, has his own private business office here. The other half of this floor is occupied by the extensive laboratory, and the basement under that is practically a miniature factory, where experiments are worked out before any novelty or change in manufacture is adopted. In the basement are the Paymaster's and Cashier's Departments, the offices of the Purchasing Department and Storekeeper, and the filing room.

Taking the elevator to the third floor the visitor is ushered to the Bookkeeping Department, where also are the offices of the Superintendent. The other portion of the third floor is devoted to the restaurant and welfare rooms, conducted by the company, for the benefit of the office force. The restaurant is a large and well-furnished room with tables and chairs in mission oak, and here also is the kitchen for furnishing the meals in the restaurant. There is also here a special dining-room for the officers and heads of departments.

On the top floor is the Order Department, where the various details of ticketing the orders for sending through the factory are made out. This floor also contains a large and well-equipped printing office with several jobbing presses, a power press, fold-

ers, binders, and addressing machines and other appliances for mailing out the literature printed in this office.

In the building adjoining the Administration Building are located the Cost Department, Sample Department, and a fully equipped hospital which serves without charge all the employees of the company.

\* \* \*

The Walpole Rubber Co. is steadily increasing its business. During the first half of the present year it has done the largest business in its history, showing a gain of over thirty per cent. over the similar term in 1911. A large proportion of this increase is in the tire department, which has necessitated the securing of an additional manufacturing plant at Foxboro, an adjoining town.

\* \* \*

The taking over of the Consumers' Rubber Co. by the Walpole Rubber Co. must redound to the great advantage of the footwear plant. Already a marked improvement is shown in the quality, finish and style of the product of this plant. Mr. Ryder, the new selling agent, is a thorough rubber shoe man. He was for years with the Boston Rubber Shoe Co., and later with the Apsley Rubber Co. He has opened an office and sample room at 508 Brown Building, 185 Summer street, on the same floor with the Walpole Rubber Co., and is showing there some fine samples of overs and tennis lines.

\* \* \*

The Hubmark Rubber Co., which is a selling agency of the United States Rubber Co., constituted to push the sales in New England of footwear specialties bearing this trademark, is entering upon an extensive advertising campaign. Recently it sent out to a large number of retailers one-half of a storm slipper, the shoe being split lengthwise, enabling the recipient to examine the construction thereof. To push the sale of a certain brand of hip-boots it has contracted with over 50 local papers published on the New England seacoast, to issue a series of specially designed and very attractive advertisements, especially directed to fishermen and sailors.

\* \* \*

Several of the manufacturers of rubber heels have made an arrangement whereby they will co-operate to exploit those heels which are provided with the "friction plug," a device of cotton fabric and rubber which, it is claimed, will overcome the tendency of rubber heels to slip on wet ice or pavements. Those interested in the combination include the Elastic Tip Co., Foster Rubber Co., F. W. Whitchee Co. of Boston, the B. & R. Rubber Co. of North Brookfield, Massachusetts, and the Revere Rubber Co. of Chelsea, Massachusetts. The heels thus advertised are the Safety Tread, Catspaw, Velvet, B. & R. and Spring Step.

\* \* \*

R. L. Chipman of Geo. A. Alden & Co., crude rubber importers, is on a business trip to Canada.

\* \* \*

Wallace G. Page, for several years sales manager of the Shawmut Tire Co., is now associated with George S. Van Voorhis in the American Marine Equipment Co., which has built up an extensive business in the sale of automobile tires and accessories.

\* \* \*

The factory recently vacated by the Plymouth Rubber Co., at Stoughton, Massachusetts, has been purchased by the Elwell Rubber Manufacturing Co., of Trenton, New Jersey, who will remove its business to the new address, Stoughton, Massachusetts. The Plymouth Rubber Co. is very busy at its new factory at Canton Junction.

\* \* \*

<sup>1</sup> An increased popularity is noted in rubber-soled shoes. Some manufacturers, who experimented last year by showing one or



two samples, met with so great success that they are now showing, for next spring and summer wear, from half a dozen to a score of samples; while a number of other manufacturers have followed these pioneers. Most of their lines have the molded soles and half heels all in one piece; and these are furnished ready to attach by manufacturers who make a specialty of rubber soles and heels for shoe manufacturers.

\* \* \*

The A. & A. Rubber Co. of South Framingham, manufacturers of rubberized fabrics, waterproof clothing and hospital supplies, will greatly enlarge their plant, not only adding to the original factory, but by erecting another structure. The present factory will be so enlarged as to give extra floorage, 150 by 40 feet, in the second story, and the present building will be paralleled by a one-story factory 150 by 60 feet. This second structure will have a false end, so that if further enlargement is necessary, a very considerable lengthening on the land of the company can be made. President Calvert B. Archer is quoted as authority for the statement that with their present facilities, even when working a day and night force, the company is unable to keep pace with its orders, and therefore the enlargement is found necessary.

#### THE RUBBER TRADE IN TRENTON.

*By a Resident Correspondent.*

THE Essex Rubber Co., Inc., has arranged for a creditable exhibit at the International Rubber Exposition, New York, scheduled for the week of September 23-30. The company has planned to have the heads of the various departments of the big local plant in attendance at the exposition during the entire show.

W. F. Bainbridge will be on hand to greet those men of the shoe trade who will find it possible to visit the exposition. R. H. Phillips and C. C. Tucker will go over from the local factory and in conjunction with S. Y. L'Hommedieu, the manager of the New York branch, will expound the virtues of the Essex automobile accessories and engineering specialties. T. Wesley Wright, manager of the shoe findings department of the local plant, is to have charge of the booth which will exhibit "Soft Spot" heel cushions and the "Tred-Lite" rubber heel.

President C. H. Oakley, who is also the general manager of this concern, expects to spend considerable time in New York during the exposition and will be glad to meet personally interested visitors. The Essex Rubber Co. is one of the busiest concerns in this section, the orders which have been piling in necessitating the employment of the working force overtime. The company is not only doing a big business in America, but finds a ready market abroad for its specialties.

\* \* \*

W. J. B. Stokes, head of the Home Rubber Co. and the Joseph Stokes Rubber Co., who recently returned from a European trip, declares that the outlook for a big export business was never brighter. He visited England, Belgium, France and other countries and spent considerable time with his English representatives.

\* \* \*

The Crescent Belting plant is a busy place just now. The force is working day and night to keep up with the flood of orders sent in by the "Live Wires" on the road for this concern.

\* \* \*

The new stock room of the Empire Rubber Manufacturing Co.'s plant is ready for occupancy. It was built at a cost of \$24,000. The old stock room was partially destroyed by the explosion of two giant vulcanizers.

\* \* \*

Although the Empire Rubber Manufacturing Co. and Empire Tire Co. and Crescent Belting and Packing Co. will not have an exhibit at the Rubber Exposition, General C. Edward Murray,

treasurer, and A. Boyd Cornell, secretary of the concerns, will be in attendance at the show. General Murray plans to spend several days at the show as does Secretary Cornell.

Carl Claus, one of the ablest engineers in the rubber business, will attend the show as will also Superintendent Abden Lee and Assistant Superintendent Frederick Bechtel.

#### THE RUBBER TRADE IN RHODE ISLAND.

*By a Resident Correspondent.*

THE wire making department recently started at the plant of National India Rubber Co., Bristol, has been almost swamped with orders. The day after Labor Day the company began operations on a night and day schedule and added 150 men to the working force.

Frederick L. Dunbar has charge of the wire department under the supervision of Le Baron C. Colt, agent of the company, who designed it.

The wire making is done in a large room formerly used as a calender department in the mill on Wood street. The company has turned out insulated wire for a long time. Recently it decided to try wire drawing in its own plant on a small scale, and immediately found itself with a large amount of business on hand. The starting on a night as well as a day schedule is the result.

It is said that the working force is to be still further increased by at least 200, and that new buildings for this branch of the industry may be erected in the near future.

\* \* \*

An idea of the value of the rubber industry to the city of Providence can be gained from the assessed valuations made public early in September for the year 1912. The assessed valuation of the property of the rubber companies is \$2,111,020, divided as follows: Joseph Banigan Rubber Co., \$161,100; Bourn Rubber Co., \$147,000; Davol Rubber Co., \$400,000; Goodyear Tire & Rubber Co., \$50,000; Mechanical Fabric Co., \$336,740; Revere Rubber Co., \$1,016,180. A tax of \$1.65 per hundred is levied upon this assessment by the city, and corporations capitalized over \$50,000 also have to pay a tax to the state.

The assessment against the Joseph Banigan Rubber Co. shows a decrease of \$149,000; that against the Davol Rubber Co. an increase of \$225,000; that against the Mechanical Fabric Co. an increase of \$75,000, and an increase of \$926,380 against the Revere Rubber Co. Nothing could furnish a surer indication of the general prosperity of the business in the capital of this state.

The total assessment against Col. Samuel P. Colt in Providence is \$210,100; against Augustus O. Bourn, \$113,640, and against the Joseph Banigan Estate, \$1,261,520.

\* \* \*

In the city of Woonsocket, where the two plants of the Woonsocket Rubber Co. and one of the American Wringer Co. are located, rates on gas and electricity are to be reduced. The present rate for gas is \$1.20 per thousand cubic feet, and for electricity 1¼ cents per kilowatt per hour. A City Council committee is working on the proposition. Hopes for success are based on a promise made by the Stone & Webster Corporation of Boston that these reductions would be made, if it could secure a charter to merge all its gas and electrical holdings in the Blackstone Valley. This charter was granted at the last session of the Rhode Island Legislature.

\* \* \*

Col. Samuel P. Colt, who went to Europe last July, returned to his home in Bristol on Saturday, September 7. He reached New York on the steamship *Olympic* September 5. In a telegram to a Providence paper he explained that while his trip abroad was primarily for pleasure he had also mixed business in. He stated that one of his tasks was an effort to list \$10,000,000 of

first preferred stock of the United States Rubber Co. on the parquet of the Paris Bourse. He expressed the opinion that negotiations were progressing satisfactorily, and that the task would be accomplished in a reasonable length of time.

The \$10,000,000 would be the minimum amount, he stated, and would be increased from time to time as the original offering was absorbed.

Col. Colt attended the marriage of his son, Roswell C. Colt, to Miss Dorothy Chipman in London. He was accompanied on his arrival in New York by the newly married pair.

On his arrival in Bristol Col. Colt and his son and the latter's bride went to the colonel's home, Linden place. He entertained a party of friends at his home three days after his arrival.

An alarm from box 332 in Providence on August 27 started considerable excitement in this city that day. It is the private fire signal of the Revere Rubber Co. (the United States Tire Co.), where the worst fire in many years broke out a few months ago. The blaze was over a boiler in the fireroom and was quickly extinguished, but enough apparatus was rushed to the scene to end a conflagration.

The largest unit of tax to be paid in the town of Bristol, Rhode Island, this year will be by the National India Rubber Co. The assessment is \$6,870.55 on a valuation of \$501,500.

Other tax figures made public during the past few weeks are: Augustus O. Bourn, who is head of the Bourn Rubber Co., \$26,000; Samuel P. Colt, \$239,000; Terrence McCarty, General Manager of the Walpole Rubber Co.'s Bristol plant, \$24,700.

Metal fittings began to disappear from the plant of the Revere Rubber Co. quite regularly late last month. Police inspectors who went to work on the case arrested Edward Abbott, 19, on August 26. Fifteen fittings were found in his possession. He was fined \$25 and costs in the Sixth District Court, Providence.

Elmer J. Rishe, an assistant foreman at the plant of the Walpole Rubber Co., Bristol, formerly known as the Consumers' Rubber Co., was married early in September to Miss Mildred Louise Macaulay. In addition to being a foreman in a rubber manufactory, Mr. Rishe is a well-known baseball player.

Gilbert McCarthy, who for many years was an arctic maker in the Alice Mill of the Woonsocket Rubber Co., died at his home in Woonsocket, September 6. He was 40 years old; was born in Wallingford, Conn., and had been employed in Woonsocket for 30 years.

## THE RUBBER TRADE IN SAN FRANCISCO.

*By a Resident Correspondent.*

MERCHANTS report that there is a decided improvement in the rubber business, and all are agreed that if present prospects continue the present fall will be one of the most prosperous in the history of the business. A heavy and, considering the time of the year, very unusual rain fell for several days last week, reaching all through the northern portion of the State and down far into the San Joaquin Valley. This rain caused an immediate demand for supplies from the wholesale houses, because the dealers were unprepared for such an emergency, and for a few days there was a grand rush everywhere.

A new company has launched forth with the object of acting as selling agents on this coast for Eastern factories. The name is the Ralphs-Pugh Co., and offices and warerooms have been fitted up at 502 Mission street. This firm is composed of men well known in the rubber business, and has started out in a business-like way. Wm. J. Pugh, for the past thirteen years

has been with the Goodyear Rubber Co. It seems that almost all of the men in this business started out and learned it under the guidance and able direction of the proprietors of the Goodyear Rubber Co. Mr. Pugh made a trip to the Eastern factories and returned with a number of good lines. Isaac Ralphs was formerly manager of one of the largest jobbing houses in San Francisco, and although he has never been identified with the rubber trade before, he has been in business here for the past twenty-five years, and is a man of high reputation. W. W. Woodd is also with the new firm, and will look after the selling end of the business. Mr. Woodd also had his training with the Goodyear Rubber Co., having been with that firm for over 18 years. Mr. Pugh has recently started out on his first trip, going to the southern part of the State, and then on his return will make the northwestern trip through Washington and Oregon.

The western territory over which Joseph V. Selby, during his lifetime, had charge for the Boston Woven Hose and Rubber Co., has since Mr. Selby's death been divided into three subdivisions. Mr. Ryker has been appointed to take care of the territory lying between Bakersfield and the northern State boundary line. Mr. Ring, who formerly represented the company at Denver, Colorado, has been selected to take charge of the Washington and Oregon territory. This district was for some time covered by Herbert Selby, son of Joseph V. Selby, but a few months ago Herbert Selby severed his connections with the company to take a position as sales manager for the Tubbs Cordage Co., of San Francisco. Mr. Lippincott, who formerly traveled for the Boston Woven Hose and Rubber Co., will now be the regular representative for Southern California and Arizona.

S. L. Plant, of the Plant Rubber and Supply Co., states that business is ahead of last year, and prospects are good for a fair business. This firm has just added a new branch to its factory for the purpose of making mold rubber work—valves, bumpers, etc.

The San Francisco Fire Commissioners have at last awarded contracts for fire hose for this city. Only four bids were submitted, two of them being eastern factories and two of them local, and the contracts were awarded to the local manufacturers. Most of the eastern factories wrote to the fire commissioners that they would gladly bid and would supply hose that would withstand the test, but they strenuously objected to the fire commissioners laying down the rules as to how they should manufacture their hose. The Bowers Rubber Works was allowed the contract for 20,000 feet of two-and-three-quarter hose. The American Rubber Co. got the contract for the three-and-a-half-inch hose, and those two concerns divided on the one-and-a-half-inch hose. Both of these are local manufacturers.

E. W. Balding, the general sales agent of the New York Belting and Packing Co., has just paid his annual visit to the Pacific Coast.

J. E. French, coast manager for the Pennsylvania Rubber Co., has returned from a trip to the Northwest, and while there opened up some important distributing points. He expects excellent business in the tire line this fall.

Mr. Norton, manager of the American Rubber Manufacturing Co., reports that the new addition to the factory at Emeryville

has been completed, and that a large new belt press has been installed. This factory is also working on a new ribbed-edged automobile tire which is considered very successful.

\* \* \*

The California Rubber Co. has been incorporated in Los Angeles with a capital stock of \$5,000. The directors are C. C. Booth, W. D. Walsh and W. C. Earhuff.

\* \* \*

The Portland Rubber Mills Co. has been incorporated at Portland, Oregon. It has a capital stock of \$25,000 and the incorporators are J. A. Spencer Smith, H. C. Huntington and G. C. Frisbie.

\* \* \*

The Portland Belt and Manufacturing Co. has been incorporated at Portland by M. P. Klepper, with a capital stock of \$25,000.

\* \* \*

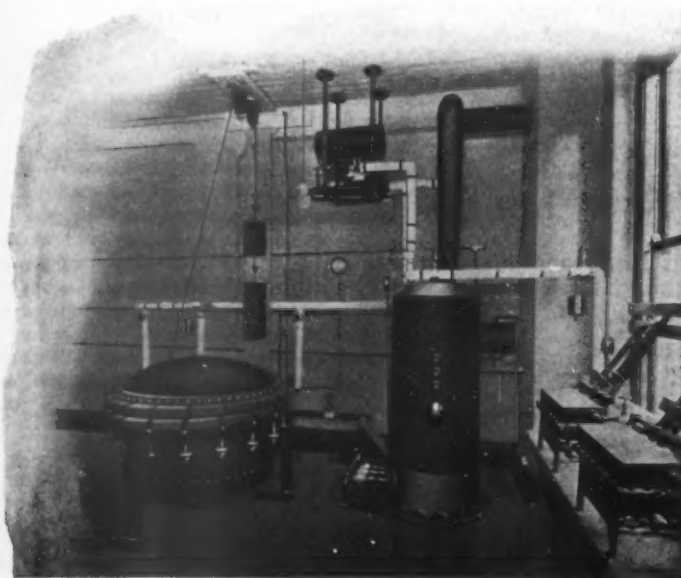
W. H. Halliwell, president of the Halliwell Co., has just returned from a trip to the factories in the East, and while there made a contract for the entire Pacific Coast on Knight tires. The Halliwell stores in Los Angeles, San Francisco, Seattle and Portland will receive the tires in carload lots, and after that by regular shipments, so that within a very short time the entire coast territory will be fully supplied.

\* \* \*

The California League of Municipalities is now holding a public welfare exhibition at Berkeley, California, and many hose manufacturers are displaying their products at the show.

#### EQUIPMENT FOR REPAIR DEPARTMENT.

THE Fisk Rubber Co., Chicopee Falls, Massachusetts, not only make tires, but they make the wherewithal to keep the tires in repair. The two accompanying illustrations show

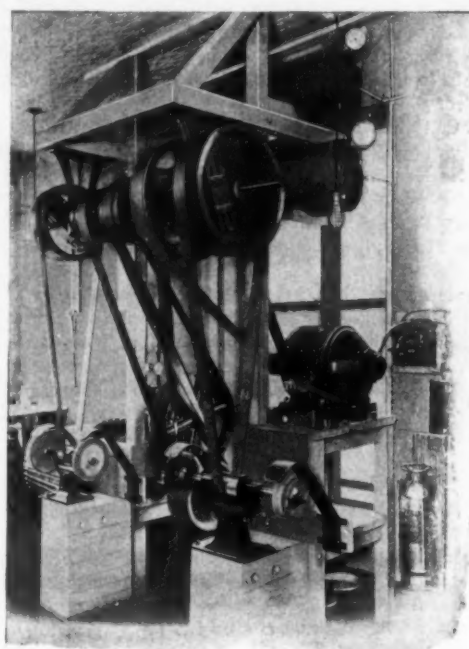


THE FISK HEATER AND BOILER.

some of their tire-repair equipment. The larger cut shows the pot heater for retreading tires, and the boiler; while the other cut shows the power bench.

The heater is shown on the extreme left with weights attached

for lifting the hinged cover. This heater is made of  $\frac{3}{8}$ -inch steel, with heavy bolts, and is equipped with traps and reducing



THE FISK POWER BENCH.

valves, making a fine apparatus for curing treads and rebuilding tires.

The gas boiler, which appears in the centre of the picture, is a convenient arrangement for producing steam for a repair shop.

The cut also shows two vulcanizers on the extreme right. Pressure for curing tubes is obtained by placing weights on the end of the levers. This gives a positive pressure which is always the same, instead of an uncertain pressure obtained by screwed clamps.

The second cut gives a view of a power bench, which is designed to give maximum efficiency within minimum space. There is a single line of shafting connected with motor and with the various pieces of its equipment. The motor is of sufficient horsepower not only to operate the buffing brushes and wheels, but also to pump sufficient air for shop use and for inflating tires; the air is carried into the tow tanks at the top of the power bench. The retreading or the buffing drum, shown at the extreme left of cut, is rapidly becoming a necessity where retreading work is done. The buffing heads shown in the foreground contain two emery wheels, a wire buffing brush and a rotary rasp. The power bench also contains an air compressor. The cut shows the compact design of the equipment.

A British diplomatic report states that a contract has been signed between the Ministerio de Fomento and Senor A. Elozria, for the establishment of factories in Mexico for the manufacture of all kinds of rubber goods; including motor and carriage tires, waterproof cloth, insulated wire, etc. At least \$125,000 must be spent upon the first factory. The materials and plant necessary for establishing the industry may be imported free of duty.



## The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

**C**LIMATIC conditions have been the reverse of those which obtained in the long, dry summer of 1911, cold and wet having been most persistent. Last year there was a run on garden hose, and extreme slackness in the waterproof garment trade. This year it has been the other way about, and the mackintosh has been in almost daily use—a fact

### THE LATE SUMMER.

which, if not reflected in an immediate increase of sales, must certainly have shortened the life of those in use, and cause renewals to be sought at an earlier date than would have been the case as the result of a normal season.

Lawn tennis, which I may say is increasing in popularity, and calling for a larger supply of balls than ever, has suffered by the weather; but if the ordinary player has saved on his ball accounts, the wet weather prevailing during many of the tournaments, has led to the use of a greater number of new balls; so I do not suppose that the season's consumption will show much falling off compared with last year. The latest novelty in balls is a corrugated-surface, uncovered white ball, which can be easily washed. This has not been recognized by tournament committees, but private players have spoken highly of it, especially for use on wet lawns, near smoky towns, chiefly because the ball can be so readily washed.

One of the disadvantages of the mackintosh for pedestrians is that in heavy rain the drippings fall on the trousers. Of late this has been remedied by the introduction of loosely fitting trouser overalls. These, made of light double-texture waterproof cloth, are becoming very popular for pedestrians and general country wear, as they are very little weight to carry when not in use. The weather has given an impetus to the sale of top-boots for children to use in gardens. I have come across quite a number of these diminutive boots this summer, and as a patriot was pleased to find that they were made by the North British Rubber Co.

The lamentable conflagration in a celluloid workroom, in London, whereby several girls lost their lives, resulted in a good

### THE CELLULOID DANGER.

deal of correspondence in the press, and in questions being asked in Parliament. It has transpired that no special regulations were in force with regard to the storage and use of large amounts of this material in crowded localities; but in the future special rules regarding it are to be enforced. It was stated at the inquest that the material used was German, which was cheaper than British, although acknowledged to be more inflammable. One would have thought that here was a golden opportunity to advertise the merits of non-inflammable celluloid, but I did not see any correspondence on the point; though of course there may have been such, which escaped my notice.

Exactly what success has attended the manufacture and sale of non-inflammable celluloid, I do not know, though at least one factory for making it has been established in England. Mr. Worden, in his treatise of last year on the nitro-cellulose industry, refers to the methods for destroying the inflammability as having been attended with varying degrees of success, though he says that the rapid growth of the moving picture industry has invested the topic with increased importance. I believe that Mr. Worden is officially connected with the section in "Plastics," at the forthcoming Congress of Applied Chemistry in New York, and any information which he could announce to the world, by way of bringing the position up-to-date, would I am sure be appreciated generally. As to the cause of the London fire there was no mystery, flaming sealing-wax in the hands of a boy being re-

sponsible. Christmas cards were the principal goods manufactured, and the firm have decided not to use sealing-wax in the future in doing up parcels. Whenever there is a conflagration of celluloid goods, there is usually some agitation that the business should be suppressed, and this question was put to the jury, who, however, thought that such business might continue to be carried on in towns, if under proper registration and supervision. We must now await the action of the Home Office, in regard to this proviso.

THIS new company, which is situated at Sculcoats, Hull, has taken over the rubber manufacturing business of Messrs. Major **THE PARAGON RUBBER & Co., Limited,** a firm which has been long established in connection with tar **MANUFACTURING CO., LIMITED.** distilling, in the Hull and Birmingham districts. The flotation of the Reinforced Rubber Co., Limited, in 1911, will be recalled by some of my readers. With this company Messrs. Major & Co. were connected, the factory being located on their premises. The Paragon Rubber Co. is an extension of the Reinforced Rubber Co., taking over the patents and goodwill of the latter under new management. Messrs. Major, Hanson and Pilling are the directors, and the general manager is E. L. Carbishley, so well known to the trade generally, owing to his past connection with Messrs. Capon, Heaton & Co., Limited, Birmingham, and the Gorton Rubber Co., Limited, Manchester.

Reinforced rubber differs from ordinary insertion, and in appearance is just like ordinary rubber, the fibres of cotton being completely incorporated in the rubber, in a tightly twisted state. The effect is to increase the stability of the rubber, while increasing its specific gravity; thus acting as a restraining influence over undue extension while in work. The works have been fitted with modern machinery for making many classes of mechanical goods, further extensions being contemplated. Rubber-covered rollers are a specialty, the firm having exceptional facilities for producing these accurately and quickly, up to 11 feet long and 30 inches in diameter. In a general way the establishment of a rubber works on the east coast is of interest, it being somewhat strange that rubber manufacturing proper has never had any location in the large Yorkshire towns. There must be a large demand for mechanical rubber goods in an important shipping centre like Hull. The manufacture most prominent in the district is that of oil seed crushing, Hull I believe ranking next to Marseilles as regards this business in Europe.

I do not propose to refer to this matter again at length, but feel constrained to mention one point in the interesting leading

### THE PUTOMAYO AFFAIR.

article in the August number of **THE INDIA RUBBER WORLD.** The credit for the exposure of that wretched business belongs solely to "Truth," which journal alone was bold enough to print copious extracts from Messrs. Hardenburg's and Perkins' MS. What appeared in other papers was given in a halting way on the authority of "Truth"—*palmar qui meruit ferat*. As indicating how public feeling has been stirred in this country by the disclosures, I may say that a town meeting to discuss the matter was called by the Lord Mayor of Manchester, on the request of many prominent business firms; and it is stated that the Blue Book has been sold out,—a fact which must have startled the purveyors of government literature. With regard to further action the position is that the government has promised to appoint a Departmental Committee to inquire into the affairs of the British Amazon Co., Limited, and the responsibility, or otherwise, of the directors thereof for what has taken place. It

is a pity that THE INDIA RUBBER WORLD has not a wider circulation among the British public, as the map given in the August number is a great improvement on what has been given in our daily and weekly press.

THE Board of Trade Report, embodying the result of the inquiry, held last December, into the explosion which occurred at the Northwestern Rubber Co. works in October, 1910, has now been issued. I have already given the Commissioner's findings at the inquiry, and the final report shows practically no alteration. Although no one at the works was found culpably negligent, reference is directed to insufficient engineering control. The cause of the explosion was hydrostatic pressure, due to over-filling of the devulcanizer; and an improvement has now been effected by the Boiler Insurance Co. whereby this cannot occur in the future. Referring to the future working of these devulcanizers, the commissioners say that they are satisfied from the evidence, that they cannot be said to be worked under safe conditions, without some safety appliance which must be automatic. Beyond that it must be automatic, they did not propose to make any definite recommendation as to what form the safety appliance should take. The matter is evidently to be left to the discretion of those who use high pressure devulcanizers, and it will be interesting to see how it develops. In an editorial in the March issue of THE INDIA RUBBER WORLD a plea is put forward for the utilization by rubber works of the services of the consulting engineer, and it certainly would seem, in the light of the four or five accidents in recent years due to plants using high pressure steam, that rubber factories, where no regular engineer is employed, should employ the consulting engineer to a greater extent than is now customary. The inspectors of the Boiler Insurance Companies in England do admirable work, of course, but it is outside their province to instruct or give advice; nor in most cases have they any detailed knowledge of the rationale of the operations involving the use of high pressure steam. I propose on a later occasion to say more on the particular question of automatic safety appliances, and shall conclude the present notice by mentioning that the Board of Trade Report refers to the boiler which exploded, as being the property of the London & North Western Rubber Co., Limited, U. S. A., of Canal Bank, Litherland. In another sentence the superfluous "London" is omitted; thus indicating some slackness in proof-reading.

#### IMPROVED DOCK ACCOMMODATION FOR RUBBER IN LONDON.

Advices from London state that owing to the rubber business of the port having tripled within the last five years, improved dock accommodation is about to be furnished. This will be effected by the transfer of the warehousing of rubber from St. Katherine's Docks to London Docks.

A special warehouse is to be set aside wherein, under ideal conditions, rubber can be received, sampled and stored against delivery to consumers. The change will provide largely improved facilities compared with those available hitherto. This innovation is, needless to say, greatly appreciated by Mincing Lane.

#### THE CAB TIRE SHEATHING FOR ELECTRIC CABLES.

The St. Helens Cable and Rubber Co., Limited (London, England), have been making a cab tire for the last 9 or 10 years which has proved very serviceable, and they have recently begun the manufacture of a rubber sheathing for electric cables. As they are making this out of the same quality of rubber used in their cab tire they call it the "Cab Tire Sheathing"—which explains why they have selected this particular name for their new production.

### STATISTICS OF RUBBER SUPPLIES AND CONSUMPTION.

THREE statistical tables, which have recently been issued, merit special attention and comparison: That of S. Figgis & Co., of London, for the calendar year 1911 (A); Hecht's returns (issued by Messrs. Hecht, Levis and Kahn of Liverpool) for the rubber year ending June 30, 1912 (B); and the recent estimate for 1913 of the Rubber Plantation Investment Trust (C).

In table A production is shown as 88,000 tons and consumption at a like amount; while in table B are summarized Hecht's figures, which for the year ending June 30, 1912, indicate production as 95,262 tons and consumption as 99,564 tons. Finally in table C the estimate for 1913 is 91,000 tons for production and 103,000 tons for consumption.

From a comparison of these tables, the estimate for 1913 (C) it will be remarked, shows the Brazilian quantity at the same figure as the report (A) for 1911—39,000 tons. Plantation rubber, which including Borneo and Rangoon may be taken as representing about 18,000 tons in table A, appears in the estimate of table C as 28,500 tons, this increased estimate being more or less in proportion to the increased supplies now coming forward. As table C does not include anything for Guayule, though figuring in table A, its estimate might therefore properly be regarded as representing about 100,000 tons for 1913, against 88,000 for 1911, and 95,262 by Hecht's figures for 1911-12. South American and plantation rubber as shown in table C constitute between them over two-thirds of the world's estimated rubber production for 1912.

The increase of consumption as shown by the three tables is more or less in harmony with the estimated increased supply being for 1911, 88,000 tons; for 1911-12, 99,564 tons; and for 1913 (estimate) 103,000 tons. American consumption, it is satisfactory to note, comes in for an increased estimate; the quantity of 42,000 tons shown for 1911 being 47,500 tons in the estimate for 1913. Thus the United States is expected to continue taking about one-half of the world's production of rubber. That this is now the case is shown by the official returns of imports for the fiscal year 1911-1912, which show a quantity of 55,000 tons, as compared with the latest estimate for 1913 of 47,500 tons. Hence this country is keeping ahead in the rubber procession, with more than three times the consumption of England, according to the English table appended (table A).

TABLE A—PRODUCTION AND CONSUMPTION FOR 1911.  
(S. Figgis & Co., London.)

| Production 1911, Actual.      |        | Consumption 1911, Actual. |        |
|-------------------------------|--------|---------------------------|--------|
|                               | Tons.  |                           | Tons.  |
| Brazil .....                  | 39,000 | America and Canada..      | 42,000 |
| W. Africa .....               | 15,000 | England .....             | 12,000 |
| E. Africa, Penang, Borneo and |        | France .....              | 8,000  |
| Rangoon .....                 | 5,500  | Russia .....              | 8,500  |
| Assam, Madagascar, C.         |        | Italy .....               | 2,000  |
| America and Mexico            | 2,500  | Japan and Australia....   | 1,500  |
| Guayule .....                 | 9,200  | Germany and Austria..     | 14,000 |
| Plantation .....              | 14,000 |                           |        |
| Malaysian and extracted       |        |                           |        |
| for Jelutong .....            | 2,800  |                           |        |
| Total .....                   | 88,000 | Total .....               | 88,000 |

TABLE B—HECHT'S WORLD'S FIGURES, 1911-12.  
(Summarized.)

|                               |        | Para    | Medium  |         |
|-------------------------------|--------|---------|---------|---------|
|                               | Tons   | Grades. | Grades. | Totals. |
| Arrivals (production).....    | 40,953 | 54,309  | 95,262  |         |
| Deliveries (consumption)..... | 44,194 | 55,370  | 99,564  |         |

TABLE C—PRODUCTION AND CONSUMPTION FOR 1913.  
(Estimate of Rubber Plantation Investment Trust.)

| Production 1913 (Estimated)  | Tons.  | Consumption 1913 (Estimated) | Tons.   |
|------------------------------|--------|------------------------------|---------|
| South America .....          | 39,000 | America .....                | 47,500  |
| Plantation .....             | 28,500 | Great Britain .....          | 15,000  |
| Africa .....                 | 15,000 | Germany .....                | 15,000  |
| Central America .....        | 5,000  | France .....                 | 10,000  |
| Assam, Rangoon, Borneo ..... | 2,500  | Russia .....                 | 7,000   |
| All other sources .....      | 1,000  | Belgium .....                | 1,500   |
|                              |        | Various countries .....      | 7,000   |
| Total .....                  | 91,000 | Total .....                  | 103,000 |

## COMMENTS UPON MESSRS. HECHT'S FIGURES.

In a circular summarized by the *Kölnische Zeitung*, it is maintained that the figures quoted in table B are inaccurate and should be as follows:

Production 91,135 tons instead of 95,262 tons.

Consumption 90,071 tons instead of 99,564 tons.

Hence it is argued that the heavy increase in the world's consumption has been surpassed by the world's production.

The point of greatest interest in the circular is the statement that Messrs. Hecht's estimate of present visible supply is insufficient, and instead of 10,181 tons should be 14,734 tons, to include rubber afloat for various destinations; to which, it is claimed, should be added about 2,000 tons undeclared Pará rubber stocks in Liverpool, and 1 to 2,000 tons in the export places of the East.

## VISIBLE STOCKS.

In the estimates of visible stocks (June 30, 1912) the figures stand as follows:

|                         | Hecht. | Suggested Correction. |
|-------------------------|--------|-----------------------|
| Pará .....              | 6,817  | 6,970                 |
| Medium plantation ..... | 3,364  | 7,764                 |
|                         | 10,181 | 14,734                |

The difference in Pará grades, it will be noticed, is slight, while in medium and plantation grades the figures stand thus:

Hecht's quantities are:

|                 | Tons. |
|-----------------|-------|
| London .....    | 1,872 |
| Liverpool ..... | 281   |
| U. S. A. ....   | 402   |
| Lisbon .....    | 350   |
| Antwerp .....   | 343   |
| Rotterdam ..... | 116   |
|                 | 3,364 |

To these figures, it is claimed, there should be added:

|  | Tons. |
|--|-------|
| Hamburg .....                                  | 400   |
| Bordeaux and Havre .....                       | 250   |
| Afloat for London .....                        | 2,150 |
| “ “ Liverpool .....                            | 250   |
| “ “ Lisbon .....                               | 200   |
| “ “ Rotterdam .....                            | 100   |
| “ “ U. S. A. ....                              | 250   |
| “ “ Hamburg .....                              | 300   |
| “ “ Bordeaux & Havre .....                     | 200   |
| “ “ Antwerp .....                              | 300   |
|  | 4,400 |
| Stock as shown .....                           | 3,364 |
| Stock of medium and plantation, as suggested.. | 7,764 |

## FIVE YEARS OF GERMAN RUBBER GOODS EXPORTS.

STATISTICAL returns of the total exports of German rubber manufactures for the years 1907 to 1911 show the equivalents of the following totals:

TABLE A.  
TOTAL GERMAN EXPORTS OF RUBBER MANUFACTURES.

|            | Weight.     | Value.       |
|------------|-------------|--------------|
| 1907 ..... | 10,502 tons | \$15,487,500 |
| 1908 ..... | 10,638 "    | 13,326,750   |
| 1909 ..... | 11,050 "    | 13,792,500   |
| 1910 ..... | 13,251 "    | 16,652,500   |
| 1911 ..... | 15,773 "    | 18,529,000   |

While the total value of German exports of rubber goods has thus increased within five years from 15½ millions to 18½ millions of dollars (or about 20 per cent.), that of the United States exports for the same period has advanced from 6¼ millions to 11 millions of dollars, or 80 per cent.

## GERMANY'S LARGEST CUSTOMERS.

The four largest foreign customers of Germany in this branch are Great Britain, France, Italy and Austria, which countries took between them about 36 per cent. of the German exports in that line for 1907, and 42 per cent. for 1911.

The separate comparative details for the years 1907 and 1911 are shown in Table B:

TABLE B.  
PRINCIPAL EXPORTS OF GERMAN RUBBER MANUFACTURES.  
1907. 1911.

|                   | Tons. | Value.      | Tons. | Value.      |
|-------------------|-------|-------------|-------|-------------|
| Great Britain.... | 2,214 | \$3,275,750 | 3,597 | \$4,254,000 |
| France .....      | 432   | 946,625     | 897   | 1,437,000   |
| Italy .....       | 249   | 442,000     | 815   | 1,106,250   |
| Austria .....     | 496   | 889,250     | 709   | 1,025,750   |
| Total .....       | 3,391 | \$5,553,625 | 6,018 | \$7,823,000 |

That the quantity has increased 85 per cent. while the value has only gained to the extent of 40 per cent. is probably attributable to the lower cost of crude rubber during the latter part of the five-year period.

## UNITED STATES TRADE WITH GERMANY'S LARGEST CUSTOMERS.

Although only about half the size of the German rubber goods trade with the four largest foreign customers of that country, that of the United States has increased at double the rate during the five years named, as shown by Table C:

TABLE C.  
UNITED STATES COMPARATIVE EXPORTS OF RUBBER GOODS.

| Great Britain.                 | 1907. |                       |
|--------------------------------|-------|-----------------------|
| Belting, hose and packing..... |       | \$ 107,731            |
| Boots and shoes.....           |       | 320,595               |
| All other manufactures.....    |       | 1,216,490 \$1,744,816 |
| France.                        |       |                       |
| Belting, hose and packing..... |       | \$ 18,968             |
| Boots and Shoes.....           |       | 53,676                |
| All other manufactures.....    |       | 40,093 \$ 112,737     |
| Italy.                         |       |                       |
| Belting, hose and packing..... |       | \$ 598                |
| Boots and shoes.....           |       | 49,203                |
| All other manufactures.....    |       | 95,930 \$ 145,731     |



|                                |           |           |             |
|--------------------------------|-----------|-----------|-------------|
| Austria-Hungary.               |           |           |             |
| Belting, hose and packing..... | \$        | 1,975     |             |
| Boots and Shoes.....           |           | 23,499    |             |
| All other manufactures.....    | 13,093    | \$        | 38,567      |
| Total .....                    |           |           | \$2,041,851 |
| Great Britain. 1911.           |           |           |             |
| Belting, hose and packing..... | \$        | 186,839   |             |
| Boots and shoes.....           |           | 631,421   |             |
| Tires .....                    |           | 1,231,894 |             |
| All other manufactures.....    | 1,115,092 | \$        | 3,165,246   |
| France.                        |           |           |             |
| Belting, hose and packing..... | \$        | 3,319     |             |
| Boots and shoes.....           |           | 75,885    |             |
| Tires .....                    |           | 194,008   |             |
| All other manufactures.....    | 118,775   | \$        | 391,987     |
| Italy.                         |           |           |             |
| Belting, hose and packing..... | \$        | 2,181     |             |
| Boots and shoes.....           |           | 74,856    |             |
| Tires .....                    |           | 18,369    |             |
| All other manufactures.....    | 43,792    | \$        | 139,198     |
| Austria-Hungary.               |           |           |             |
| Belting, hose and packing..... | \$        | 8,676     |             |
| Boots and shoes.....           |           | 19,376    |             |
| Tires .....                    |           | 329       |             |
| All other manufactures.....    | 9,658     | \$        | 38,039      |
| Total .....                    |           |           | \$3,734,470 |

Grouping the results the following position is shown:

| TABLE D.   |             |             |  |
|--|-------------|-------------|--|
| EXPORTS OF RUBBER GOODS TO FOUR LEADING MARKETS. |             |             |  |
|  | 1907.       | 1911.       |  |
| Germany .....                                    | \$5,553,625 | \$7,823,000 |  |
| United States .....                              | 2,041,851   | 3,734,470   |  |

Thus, while Germany has gained at the rate of 40 per cent. the United States has progressed in more than double that proportion. American manufacturers should be thereby encouraged to persevere in their efforts to catch up with their German competitors in the export field.

#### UNITED STATES TRADE WITH GERMANY.

American imports of rubber manufactures from Germany, which in 1907 represented \$1,028,746, afterwards dropped by degrees, amounting in 1911 to \$438,302. United States exports to Germany of rubber manufactures meanwhile rose from \$475,478 in 1907 to \$711,831 in 1911.

#### NEW PATENT LEGISLATION IN HOLLAND.

Official announcement has been made of the going into effect on June 1, 1912, of the new Dutch law referring to patents. The patents issued under its provisions cover Holland, with its colonies and dependencies. It has a retroactive effect, extending back for a year.

In view of the increased cultivation of rubber in the Netherlands Indies, inventors of planting machinery will doubtless see the advantages of availing themselves of the new Dutch law.

#### "SUPRA RUBBER."

During the quest after synthetic rubber, a product, named by the inventors "Supra Rubber," seems to have been obtained by the syndicate, which is said to promise a fair degree of success. This is a filling substance to be used in conjunction with high-grade natural rubber. Samples of a compound, reputed to have been composed of 50 parts supra rubber to 100 parts of fine Para, have been shown and have proved to be strong and resilient. As the estimated cost of "supra rubber" is six pence per pound, its

possible use as a filling has a practical interest, apart from its association with the general question of synthetic rubber.

#### THE FRANZ CLOUTH COMPANY 50 YEARS OLD.

On the 11th of September last the firm of Franz Clouth, Coln-Nippes, Germany, attained a full half century, and commemorated that event with various exercises. On the evening of the 10th, the night before the company's birthday, a memorial service was held at the grave of the company's founder, Mr. Franz Clouth, who died two years ago. On the next day a celebration was held in the auditorium of the Civil Casino, which was attended by the members of the Clouth family, employees of the firm, a deputation of workmen and the local authorities, together with representatives of the manufacturing industry and of commerce. These exercises were followed by a luncheon, and in the evening a banquet was given at the Zoological Gardens, after which there was an informal gathering of those interested in the firm and their many friends.

#### ASBESTOS AND RUBBER COMPOUNDS.

THE question of asbestos and rubber compounds has recently been discussed in the "Gummi-Markt," with special reference to "Vulcan-Asbestos" and "Ite" compounds.

##### "VULCAN-ASBESTOS."

This insulating material is a gummed felt, composed of asbestos fibers, with coloring and filling substances. In consequence of the regular distribution of the asbestos fiber, a felted slab is obtained, which meets the highest electro-technical requirements. Subjoined is the method of producing these slabs:

The washed rubber, as shown in the annexed compound, is kneaded in a kneading mill, with 77 pounds of light benzene; while the other ingredients are added by degrees. The mass is kneaded until a uniform solution is produced, which process may last two hours. Only then is the asbestos fiber, ground to the fineness of flour, slowly added; the whole being then kneaded for an hour. As soon as the mass has become thoroughly mixed it is laid out in large frames, the benzene is evaporated in a vacuum cabinet and the slabs dried. The latter are then placed between plates of zinc under the hydraulic press, at a pressure of 284½ pounds per square inch. Finally, the pressed slabs pass through the glazing calender, and are ready to be used for the manufacture of magnet-spools, rollers, sounding boards, etc. The vulcanization compound follows; it being also possible to vulcanize the slabs in the press, under hydraulic pressure.

##### RECIPE FOR COMPOUND.

|                                  | Grams. | Pounds. |
|----------------------------------|--------|---------|
| Massai .....                     | 2,500  | 5.5115  |
| Colombia .....                   | 2,500  | 5.5115  |
| Odorless rubber substitute ..... | 2,000  | 4.4092  |
| Reclaimed rubbers .....          | 2,000  | 4.4092  |
| Sulphur .....                    | 2,500  | 5.5115  |
| Golden sulphide of antimony..... | 4,000  | 8.8184  |
| Kaolin .....                     | 4,500  | 9.9207  |
| Sulphate of baryta .....         | 4,000  | 8.8184  |
| Japan red .....                  | 4,500  | 9.9207  |
| Zinc white .....                 | 4,500  | 9.9207  |
| Linseed oil .....                | 1,000  | 2.2046  |
| Calcined magnesia .....          | 500    | 1.1023  |
| Asbestos fiber .....             | 16,000 | 35.2736 |
| Burgundy pitch .....             | 1,000  | 2.2046  |

##### "ITE" COMPOUNDS.

It is remarked that the demand for ordinary rubber packing slabs has declined in proportion to the extent to which a tendency has been displayed for the use of superheated steam and higher steam pressures. At a pressure of 12 atmospheres (about 160

pounds to square inch) and a temperature of 180 to 185 degs. Cent. (356 degs. to 365 degs. Fahr.), ordinary rubber packing cannot be any longer used, as it will not stand the strain. To meet these requirements, new compounds were found necessary. These acquired the name of "Ite" compounds, on account of most of their designations terminating in "ite," as the special mark of certain firms; such as "Klingerite," "Moorite," "Metzelerite," "Cooperite," etc. Within a relatively short time, particularly in Germany, there has arisen a keen competition in these compounds; what was at one time a specialty having now become a staple, to the disadvantage alike of producers and distributors.

In principle these "Ite" compounds consist of a felted mass with a foundation of asbestos. Siberian asbestos bears high temperatures better than the Canadian material. Long fibers are necessary; asbestos waste not being suitable.

The special compounds for "Ite" slabs, generally contain mineral substances, such as kaolin, baryta, oxide of iron, etc. Rubber is employed in limited quantity, chiefly as a binder. Balata is also used. Such compounds produce a packing, tough and flexible in character and as tenacious as leather; unaffected by pressure or heat. The rubber employed is first dissolved in benzine; the fluid mass obtained being divided into two parts and mixed with the powdered substances to be added; a uniform pulp being thus obtained. The asbestos fiber is then added; the whole being kneaded long enough for the whole mass to become felted. The better the fiber is carded before being mixed, the more regular is the mixture.

After having been thus prepared, the mass can be brought into slabs in different ways; or it can be rolled advantageously in separate layers, with tempered cast iron calenders. The ends of the slabs can be placed together, so that sheets of 10 or 15 feet can be produced. In some factories, sheets of 15 feet can be made without the need of joining the separate slabs.

The pulp coming from the mixing machine is rolled between cold cylinders; being taken up on a cloth which carries it to the rolling mill, where the sheets are pressed. As soon as the desired thickness is attained, the slab is cut off and removed. The cylinders can be heated or used cold. Finally the sheets are pressed in order to obtain hard slabs.

#### INTERNATIONAL COMPARATIVE STATISTICS.

An interesting result is presented by a German statistical return, showing the comparative German, English and French imports and exports for 1910 and 1911. Converted into American equivalents, the figures stand:

| GERMANY.      |                 |                 |  |
|---------------|-----------------|-----------------|--|
|               | 1910.           | 1911.           |  |
| Imports ..... | \$2,232,990,000 | \$2,386,195,000 |  |
| Exports ..... | 1,868,665,000   | 2,025,452,500   |  |

| ENGLAND.      |                 |                 |  |
|---------------|-----------------|-----------------|--|
|               | 1910.           | 1911.           |  |
| Imports ..... | \$3,460,042,500 | \$3,470,850,000 |  |
| Exports ..... | 2,196,075,000   | 2,316,837,500   |  |

| FRANCE.       |                 |                 |  |
|---------------|-----------------|-----------------|--|
|               | 1910.           | 1911.           |  |
| Imports ..... | \$1,793,332,500 | \$2,040,165,000 |  |
| Exports ..... | 1,246,760,000   | 1,184,415,000   |  |

For comparison with the above figures the following returns for the United States for the calendar years 1910 and 1911 will be of interest:

| UNITED STATES. |                 |                 |  |
|----------------|-----------------|-----------------|--|
|                | 1910.           | 1911.           |  |
| Imports .....  | \$1,562,904,151 | \$1,533,067,130 |  |
| Exports .....  | 1,829,022,929   | 2,058,413,224   |  |

#### RUBBER RESIN AND ITS USES.

In connection with the subject of its railway classification, Herr Badermann has summarized the chief features affecting the production and uses of rubber resins.

From the latex of the *Djera costulata*, found in quantity in Borneo and Sumatra, a raw material exudes which, according to its origin and port of shipment, is generally known as Jelutong. Its composition is about as follows:

|  |              |
|--|--------------|
| Water .....                              | 70 per cent. |
| Resin .....                              | 20 " "       |
| Foreign matter and albuminous substances | 2 " "        |
| Rubber .....                             | 8 " "        |

After the extraction by pressure of the greater portion of the water, the mass is treated in closed boilers with a solvent, the composition of which is a trade secret. The resin and foreign matter are separated from the solid rubber by allowing the fluids to escape. The solution of resin is then conducted into an apparatus, by means of which first the water and then the resin solvent are removed by distillation, the residue left in the still consisting of resin and of the impurities separated.

The Chemical Testing Bureau at Berlin in its report upon rubber resin as compared with imported resin, states:

"We have not maintained that rubber resin equals American pine resin in all its possible uses, but have concluded that it competes with the ordinary rosins of commerce in the art and varnish industries."

One firm at Magdeburg, Germany, had asserted that the product of distillation of rubber resin had an unpleasant odor. Upon this point the report adds that all rosin oils obtained by distillation (unless intended for use in axle lubricants) have to be freed from their odor by chemical purification. The distillate of rubber thus treated is an extremely viscous product, with an agreeable odor, which fully competes with rosin oils of different origin.

With respect to the objections which have been urged as to the use of rubber resins in the varnish industry it is pointed out that after solution a small proportion is again precipitated; but not, as has been asserted, the largest part. This action is, however, more or less shown by all rosins used in the varnish industry. Every rosin needs to stand a long time for clarification before it is ready for use.

#### JAPANESE CRUDE RUBBER IMPORTS.

By Our Regular Correspondent.

OWING to the recent publication of fuller official details, the estimates already published of the comparative Japanese crude rubber imports for 1910 and 1911, are now available in more complete form, as shown below:

#### SOURCES OF JAPANESE CRUDE RUBBER IMPORTS.

|                        | 1910      |             | 1911      |             |
|------------------------|-----------|-------------|-----------|-------------|
|                        | Pounds.   | Value.      | Pounds.   | Value.      |
| British India .....    | 54,175    | \$ 45,112   | 121,160   | \$ 118,355  |
| Straits Settlements .. | 892,928   | 617,012     | 1,223,071 | 691,651     |
| Dutch India .....      | 119,593   | 70,317      | 132,173   | 80,703      |
| Great Britain .....    | 311,559   | 474,727     | 426,013   | 467,696     |
| Germany .....          | 13,845    | 20,621      | 4,588     | 3,563       |
| United States .....    | 85,476    | 121,797     | 112,170   | 126,363     |
| Other countries ....   | 103,342   | 156,397     | 35,689    | 41,678      |
| Total .....            | 1,580,918 | \$1,505,983 | 2,054,864 | \$1,530,009 |

The increase thus shown for 1911 of about one-third in quantity, owing to the fall in prices, only resulted in about the same value as in 1910. Considerably increased attention was paid in Japan to the crude rubber trade, as a result of the advance witnessed in 1910 in the crude material.

Of the total quantity imported by Japan in 1911, the largest

proportion consisted of planted Pará rubber from Malaya, constituting over 60 per cent. of the whole. Receipts from Great Britain amounted to about 20 per cent. of the total; principally consisting of hard-cure Pará rubber produced in Brazil, with a small proportion of African grades. Imports from Germany and the United States were of the same general character as the British shipments.

It has been asked why Japan does not import direct from Brazil, and thus purchase more advantageously. Such an idea is, however, of a visionary character, as London and the other crude rubber points form a central market, whose operations influence prices throughout the world; thus establishing a universal standard of value.

Of the imports from Dutch India, the largest proportion consisted of Borneo rubber; Jelutong and gutta-percha being likewise represented. Some Borneo rubber was shipped via Manila, as well as through British India.

Prices of Pará rubber in Japan displayed less fluctuations in 1911 than had been the case in 1910, varying in the monthly average for 1911 per 100 pounds, as follows:

|                |          |                 |          |
|----------------|----------|-----------------|----------|
| January .....  | \$118.18 | July .....      | \$113.40 |
| February ..... | 156.87   | August .....    | 113.40   |
| March .....    | 173.88   | September ..... | 120.96   |
| April .....    | 139.86   | October .....   | 117.18   |
| May .....      | 136.08   | November .....  | 108.62   |
| June .....     | 158.76   | December .....  | 113.40   |

While Japanese imports of crude rubber amounted for 1910 to 2,054,864 pounds (or an average of about 170,000 pounds a month), the returns for this year show a falling off, the latest available figures for 1912 being:

|                | Pounds. |
|----------------|---------|
| February ..... | 58,152  |
| March .....    | 80,183  |
| April .....    | 67,260  |
| May .....      | 99,799  |

#### DISTRIBUTION OF JAPANESE RUBBER IMPORTS.

By the subjoined table the respective shares in rubber imports of the two principal Japanese trade ports are shown:

#### DISTRIBUTION BETWEEN JAPANESE PORTS.

|                   | —1910—    |             | —1911—    |             |
|-------------------|-----------|-------------|-----------|-------------|
|                   | Pounds.   | Value.      | Pounds.   | Value.      |
| Yokohama .....    | 1,026,266 | \$1,062,016 | 1,044,199 | \$ 794,342  |
| Kobe .....        | 554,652   | 443,967     | 1,008,240 | 732,933     |
| Other ports ..... |           |             | 2,425     | 2,734       |
| Total .....       | 1,580,918 | \$1,505,983 | 2,054,864 | \$1,530,009 |

The chief interest of the above figures lies in the fact that Kobe has almost doubled the quantity of its rubber imports, while those of Yokohama have remained stationary. Such a result is due to increased consumption of rubber by the European firms located at Kobe, including the Dunlop Rubber Co. (Far East), Limited, and the Ingram Rubber Manufacturing Co. of Japan. Many of the Japanese rubber manufacturers at Kobe, Osaka and Kyoto helped in using the augmented receipts at the port of Kobe.

#### EUROPEAN RUBBER COMPANIES IN JAPAN.

Kobe is the seat of the chief European rubber manufacturing companies domiciled in Japan, to whose increased consumption is attributed the recent development of crude rubber imports at that port.

The Dunlop Rubber Co. (Far East), Limited, was established at Wakinoama, Kobe, in 1908, with a capital of \$435,000. Its principal manufactures are automobile, cycle and jinrikisha tires,

as well as mechanical rubber goods. The works cover an area of 2½ acres, the power equipment consisting of one engine and two boilers (each of 250 H. P.). Nine hundred hands, male and female, constitute the working staff.

Most of the officials are English, including the experts, the manager being Mr. B. V. Williams.

The Ingram Rubber Manufacturing Co., of Japan, was established at Shiriiki, Hyogo, in 1908, by Mr. Arthur Ingram, son of the president of the Ingram Manufacturing Co., London. During the following year it was converted into a stock company. Its manufactures include surgical and mechanical goods. The area of the works is three-fourths of an acre, 350 male and female hands being employed, while the mechanical equipment includes four engines and two boilers (each 70 H. P.). Mr. Tom Parker is works and shop manager. The plant is now being removed from Shiriiki to Wakinoama, Kobe, where the Dunlop Rubber Co. are situated. It is contemplated for the two companies to each get motive power from the same engines and boilers, with the result of effecting great economies.

A third European rubber company, established at Wakinoama, is the Premier Greer Cycle & Motor Manufacturing Co., of Japan, Limited, with a capital of \$150,000. The manager is Mr. J. L. Newman.

#### GERMAN RUBBER IMPORTS.

According to the most recent German statistics, the total of crude material imported by the rubber industry during the year 1911 represented 31,042 tons, as compared with 34,061 tons for the year 1910. The separate classification of this total was as follows:

#### GERMAN CRUDE MATERIAL IMPORTS.

|                          | 1910.  | 1911.  |
|--------------------------|--------|--------|
| Rubber .....             | 18,705 | 19,959 |
| Gutta-percha .....       | 8,694  | 3,507  |
| Balata .....             | 773    | 774    |
| Scrap .....              | 5,143  | 5,937  |
| Rubber substitutes ..... | 746    | 865    |
| Total .....              | 34,061 | 31,042 |

The shortage of 3,000 tons in crude material shown by 1911, as compared with 1910, is caused, it will be seen, by a falling off in gutta-percha, of 5,000 tons, partially offset by an increase of 1,200 tons in rubber and of 800 tons in scrap.

By another table are indicated the sources of supply, which throw light upon the development of the German crude rubber trade.

#### SOURCES OF GERMAN RUBBER IMPORTS.

|   | 1910.  | 1911.  |
|---|--------|--------|
| Brazilian Rubber.....                     | 5,686  | 6,811  |
| Other South American and Central Rubber.. | 939    | 1,340  |
| African Rubber .....                      | 7,323  | 6,455  |
| Asiatic Rubber .....                      | 2,859  | 2,717  |
| Mexican Rubber .....                      | 1,347  | 2,099  |
| Indirect imports .....                    | 551    | 537    |
| Total .....                               | 18,705 | 19,959 |

Of the quantities credited to African rubber, the proportion from the German colonies is shown in the following table:

#### GERMAN RUBBER IMPORTS FROM GERMAN COLONIES.

|   | 1910. | 1911. |
|---|-------|-------|
| German East Africa.....   | 476   | 602   |
| Kameun .....  | 1,935 | 1,805 |
| Togo .....  | 129   | 120   |
| German South West Africa.....   | 258   | ....  |
| Kameun thus constitutes the principal source of German colonial rubber. |       |       |



## Some Rubber Planting Notes.

### THE RUBBER PLANTATIONS INVESTMENT TRUST.

THE report of the above company for the year ending March 31, presented to the third meeting of shareholders, has various features of interest. With a capital of £1,000,000, of which £525,000 is paid up, profits for the year 1911-1912 amounted to £76,575, equalling about 15 per cent.

It would seem that these profits, out of which a dividend of 10 per cent. was paid, were derived from two sources: Investments of about £740,000 in 31 companies; and of about £200,000 in three properties in Sumatra and one in South Travancore. In the aggregate these four properties represented 54,324 acres, of which 10,521 acres are planted. In this way the principle of distributing risks is carried out to the fullest extent.

From a geographical standpoint, the investments in various companies are distributed as follows:

|                          | Per Cent. |
|--------------------------|-----------|
| East Coast Sumatra ..... | 34        |
| Java .....               | 27        |
| Malay Peninsula .....    | 16½       |
| Southern India .....     | 12½       |
| Ceylon .....             | 10½       |
|                          | 100       |

The distribution among various crops is shown as follows:

|   | Per Cent. |
|---|-----------|
| Rubber (including coffee interplanted in rubber) .. | 63        |
| Tea .....   | 24        |
| Tobacco and other products.....                     | 13        |
|   | 100       |

By the history of the properties owned by the company, the course of rubber prices is indicated. Of the 10,521 acres planted, 5,647 are in tea and 500 in coffee; the balance of 4,374 acres being in rubber, planted as follows:

|                            | Acres. |
|----------------------------|--------|
| 1908 .....                 | 145    |
| 1909 .....                 | 296    |
| 1910 .....                 | 534½   |
| 1911 .....                 | 1,237½ |
| 1912 .....                 | 307    |
| In course of planting..... | 181    |
| Sanctioned for 1912 .....  | 1,673  |
| Total .....                | 4,374  |

The large amount of planting in 1911 was a natural sequence of the boom of 1910, and it is of interest to note that an even larger amount has been sanctioned for this year.

In dealing with these figures, Mr. E. L. Killick, in the "Financier" of London, criticizes the large proportion allotted to Sumatra and Java. He remarks that the Ceylon companies have an unsurpassed record while it is scarcely conceivable that the profits earned by rubber estates in Malaya will ever be approached elsewhere.

### RIVERSIDE (SELANGOR) RUBBER CO., LIMITED.

The yield for the 8 months ended August 31, 1912 was 101,854 pounds; as compared with 29,466 pounds for the corresponding months of 1911.

### SCOTTISH MALAY RUBBER CO., LIMITED.

During the eight months ended August 31, the total yield was 101,733 pounds, as compared with 45,495 pounds for the corresponding months of 1911.

### DIRECTOR LYNE ON TOUR.

With a view to investigating local conditions, R. N. Lyne, the newly appointed Ceylon Director of Agriculture, and C. Driberg, Secretary of the Agricultural Society, recently completed a week's tour through the Northwest and north of the island, in course of which they visited Jaela, Negombo, Marawila, Chilaw, Puttalam, Anuradhapura, Jaffna and Vavuniya. From Jaffna a complete circuit of the Peninsula was made and a visit paid to Karativu Kayts Islands.

In the course of the tour the new director had the opportunity of meeting the revenue officers of the different provinces and districts visited, while in Jaffna a conference was held with the officials and others interested in agriculture.

### MR. WICKHAM'S IMPROVED SMOKING APPARATUS.

Much interest has been displayed in Ceylon, as to the introduction of H. A. Wickham's "Mocha" smoking apparatus, intended to produce the equivalent of fine hard Pará by means of the "smoke cure." This apparatus is made by David Bridge & Co., whose agents, the Colombo Commercial Co., were, according to latest accounts, overhauling the apparatus just arrived with a view to a demonstration to be shortly held at their works.

It is of interest to note that a preliminary demonstration of the invention, with the small working model B, which has been several months on the island, was recently held at Peradeniya Gardens. This demonstration took place under the personal supervision of Mr. Wickham, in presence of Mr. Lyne, the recently appointed director, and the officials of the Gardens. The model worked very satisfactorily; it being anticipated that as soon as the machines are placed on the local market, they will become popular.

### NEW TAPPING KNIFE.

During his stay in Ceylon, Mr. Wickham has also experimented with his now well-known tapping knife and found this likewise answered to expectations in every respect, except that possibly with older trees and hardened bark the spring of the knife would be more useful if it were of a stronger make. It appears that part of the essential working is that there should be a rapid withdrawal after the incision, and that the speed of the withdrawal will depend on the strength of the spring.

It is an encouragement for younger rubber experts to see the "Father of the Rubber Industry" thus at work, introducing his two latest inventions. Both the inventions are the outcome of half-a-century of experience, and unrivalled early acquaintance with the practices of the rubber-gatherers in the home *par excellence* of *Hevea* rubber, Brazil.

### SUMATRA COMPANIES.

Figures of the United Serdang Rubber Plantations, Limited, for August show 61,511 pounds, as compared with 21,688 for the same month last year. During the financial year ended August 31 the total yield has been 532,360 pounds, as compared with 218,530 pounds for the preceding annual period.

In the yield of the Salang Rubber Estates, Limited, there has likewise been a considerable increase, the quantity for August having been 14,966 pounds, as against 4,898 pounds in August, 1911.

The Tandjong Rubber Co., whose holdings have just become productive, starts off with crops of 9,899 pounds in July and 11,828 pounds in August.

### VALLAMBROSA RUBBER CO., LIMITED.

For the five months ending August 31, the yield of above company has represented a total of 202,000 pounds, as compared with 160,700 pounds for the corresponding period of 1911.

## GERMAN VIEW OF MALAYAN RUBBER PRODUCTS.

THE general question of Malayan rubber production has recently been dealt with by the German Imperial Consulate General at Singapore. Attention is drawn to the yields of the last three years:

|            | Pounds.    |
|------------|------------|
| 1909 ..... | 7,461,070  |
| 1910 ..... | 14,569,307 |
| 1911 ..... | 23,954,144 |

Between 1909 and 1910 there was thus an increase of about 100 per cent., while 1911 only showed an increase of 60 per cent. as compared with 1910, the rate of augmentation being slower, and the yield being 15 per cent. below the estimated quantity.

A further increase for 1912 is indicated by the fact that for the six months ending June 30, the exports from Malaya amounted to 18,980,798 pounds, or at the rate of about 38 million pounds for the present year, as compared with 7½, 14½ and 24 million for the three preceding years.

Leaving aside the consideration of the past and present, and carrying on the figures up to 1916, the United States consular estimates, as shown below, acquire special interest:

|            | Pounds.     |
|------------|-------------|
| 1912 ..... | 36,000,000  |
| 1913 ..... | 48,000,000  |
| 1914 ..... | 66,000,000  |
| 1915 ..... | 90,000,000  |
| 1916 ..... | 130,000,000 |

While plenty of rubber is thus in sight from Malaya up to 1916, the yield after that date will naturally be more or less affected by the policy now being followed as to new planting. In this connection certain passages in the German consular report are of interest.

The fact that after the product had doubled between 1909 and 1910, the rate of increase for 1911 as compared with 1910 should have descended to 60 per cent. would imply that special causes had been operative in retarding the development of yield.

On this subject the German report states: "The plantations quickly recovered from the drought, but more than a year will be required for the rubber industry to overcome the hurtful influence of the 'boom' and to have established a permanently sound financial basis. The number of plantation companies founded during the 'boom,' which, owing to over capitalization, unsuitable soil conditions, unskilful planting, bad management, inaccessible location of the plantations, or labor difficulties, were to be regarded in advance as of deficient vitality, must be more than 100. But there are also a number of old companies, with respect to which a stoppage, or diminution of activity, has to be recorded, chiefly on account of over-tapping the trees, or lack of capital. From the last-named cause several plantation companies have been forced into liquidation.

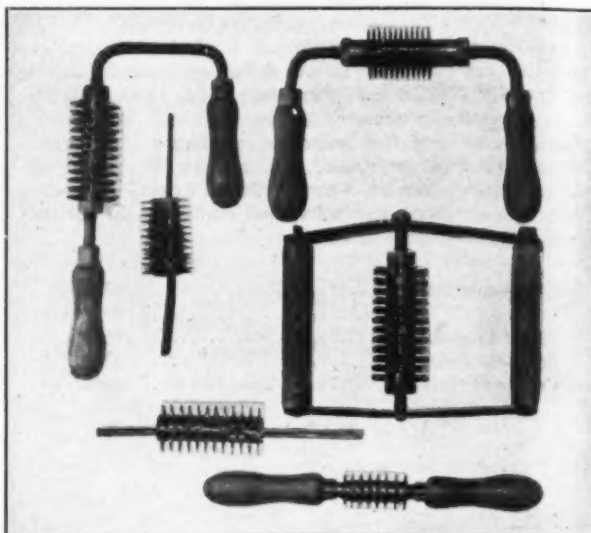
"The planting of rubber in British Malaya has come to a standstill. There are only a few large companies prepared for further planting. With the others the necessary means are lacking. The total yield will of course quickly increase, as the young trees come into bearing. Well-managed companies will in any case be able to report a steady increase in their yields of rubber, if not of their dividends."

These German official views are calculated to support the ideas of those who consider the future Malayan production as over estimated, in the figures which have been published on the subject.

Replete with information for rubber manufacturers: Mr. Pearson's "Crude Rubber and Compounding Ingredients."

## "PRICKER" TAPPERS FOR "CASTILLOA."

AN exceedingly interesting experiment in *Castilloa* tapping tools is shown in the accompanying illustration. The tool is of the "pricker" type, designed to make a series of incisions by being drawn down the tree, suitable pressure being exerted by the grasp upon the handles. Four types of tool will be noted, and much thought and labor was put upon the device. It was



VARIOUS TYPES OF "PRICKER" TAPPERS.

not wholly successful, partly because *Castilloa* Bark is so exceedingly tough, and partly because the rotary prickers made a drawing incision, rather than a direct puncture. The designs were made by the late J. B. Carruthers when he was in charge of the Botanical Gardens in Trinidad, and are a souvenir of last winter's visit to that island by the Editor of THE INDIA RUBBER WORLD.

## DEATH OF A PIONEER MALAYAN RUBBER PLANTER.

Through the premature death at the age of 42 of F. E. Pears, of the Lanadron Estates, after an operation in London, Malaya has lost one of its pioneer rubber planters. After a few years passed in the family soap-making concern, he went to Malaya in 1899, where he obtained a tract of land. This tract was named Lanadron in remembrance of the Cornish village from which the Pears family had originated.

Commencing with the planting of 25 acres in 1899, the estate had by the end of 1909 increased to 11,281 acres, of which nearly half was under rubber. Mr. Pears developed the property from its virgin state into a rubber plantation that has served as a model for many later ventures. He pursued a policy of management which ran the estate ahead of most of its contemporaries and Lanadron rubber was recognized in the home markets as a first-grade product from the beginning. All the improved methods of sanitation and housing which the governments of the Straits and the F. M. S. now insist upon, were carried into effect by Mr. Pears on his own initiative years ago. Recognizing always the importance of an adequate and contented labor force, his coolies were his first care.

Mr. Pears' death is additionally to be deplored, occurring, as it did, a few months after that of his brother, Thomas, in the "Titanic" disaster.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

## EXPERIMENTAL RUBBER CULTIVATION AT PARA.

SEEING the importance now attached to the question of rubber planting in Brazil, it is of interest to note some facts recorded by Mr. Walter Fischer, the rubber consulting expert, formerly with the United States Department of Agriculture. These facts were gathered by him within the last few years, during his residence in Pará, as director of the Pará Agricultural Experiment Station.

While, generally speaking, rubber planting is backward in the Amazon valley, several companies have lately commenced to go into the work in a practical

manner; Mr. Fischer having co-operated in the preliminary investigations and experiments on the subject.

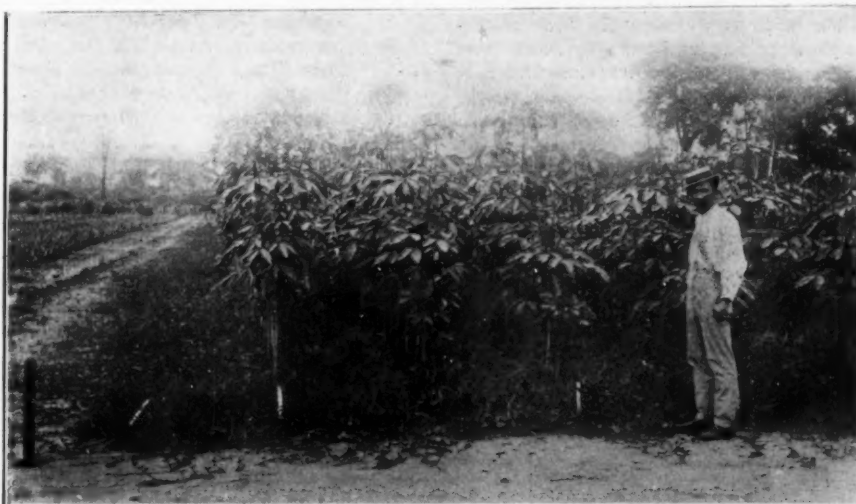
In Mr. Fischer's opinion, the safest and cheapest method in the long run is that of planting by stumps, although this plan means an extra year's growth being allowed in the nursery.

The first application of this stump-planting method in the State of Pará was at the Pará Agricultural Experiment Station, and is shown in Fig. 1, representing a model rubber plantation on the Station grounds. The tree where the man is standing, as also the row directly behind him, show a growth of 15 months (April, 1910, to July, 1911) from good-sized stumps; while the tree on the man's left is from a smaller stump and those beyond are seedlings of same age as stumps. The trees in the plot shown are planted 26 by 26 feet, and have been interplanted with mandioca (Cassava).

Fig. 2 shows a nursery of *Hevea* or Pará rubber trees in the above-named Station at Pará. This was the first and only real nursery of *Hevea* in the State of Pará. Modern and northern nursery methods were employed in growing these trees and with great success. In March, 1912, they were just one year old and for planting as "stumps," being thus a step forward.

It is to be regretted that Mr. Fischer's valuable services to the

cause of Brazilian rubber planting were interrupted by illness of both himself and wife, which necessitated their return to the States. He trusts, however, at a later date to resume his work in Brazil and to carry further his investigations and experiments.



*Hevea* NURSERY, PARA AGRICULTURAL EXPERIMENT STATION



PARA AGRICULTURAL EXPERIMENT STATION.

IMPROVEMENTS  
AT PORTO VELHO.

One of the most interesting features of the revived "Porto Velho Marconigram," (just reappeared after a cessation of nine months), is a review of current progress at that point. This summary, bridging over the above-named interval, serves to connect the present with the past; thus affording a continuous record

of the progress which has been made at this busy port. Prominent among the works which have been carried out,

is the removal of 1,000 feet of soil at the end of the hill on which are situated the engineers' quarters; as well as a good portion of one side of "Igarape Heights." The earth taken out has been used in bringing the Porto Velho Yard to grade; obliterating the marshy place in the southern end of the yard.

The appearance of the warehouse district has been completely altered by the erection of new storehouses for freight and materials along the river front. Notable among the latter is that of the mechanical department. Several new residential buildings have been completed on Boulevard Farquhar and on Wireless Hill.

But the most important event in connection with Porto Velho has been the Madeira-Mamoré railway. When the "Marconigram" suspended publication in September, 1911, about 137 miles were completed. Nine months later, at the date of its re-issue, the remaining 90 miles were closely approaching completion. This line opening up, as it does, extensive business prospects for Eastern Bolivia, has been justly qualified as the master-

key to the entire section in which Porto Velho is situated. It is thus of interest to note that the anticipated opening of the line



has been marked by active building operations at that point, as well as by other phases of commercial development, notable among which is the resurrection of the "Porto Velho Marconigram," to which THE INDIA RUBBER WORLD extends fraternal congratulations and good wishes.

#### A BERMUDA RUBBER TREE.

The accompanying illustration shows one of the *Ficus elastica* trees which attain such large size in Bermuda. These trees grow to a height of about 70 feet, and are sometimes 15 feet in circumference; while some of the branches in their largest circumference measure from 2 to 2½ feet. Rubber culture has never been attempted in any serious way in Bermuda, but Mr. Arthur E. Friswell, an old rubber man, who was connected with



*Ficus Elastica* IN BERMUDA.

the Mechanical Fabric Co., of Providence, Rhode Island, for a number of years, and later with the Goodyear Tire & Rubber Co., Akron, Ohio, and who recently removed to Bermuda, intending to make it his permanent home, has tapped one of these trees 30 years old, and sent a sample of the rubber to this office. It is practically identical with what used to be known some years ago as Java rubber.

#### RUBBER IN ANGOLA.

According to the "Gummi-Zeitung," the first ton of crude *Manihot* rubber was exported from the Loanda district, Portuguese West Africa, in 1911. Two-year-old *Manihot* *Jequie* trees were tapped for the first time, giving an average yield of about 1¼ oz. Practical results were obtained with a new tapping knife from *Manihot* *Glasiowii*. The latex is diluted with an alkaline solution, so that its quick flowing is prevented. In consequence the rubber is obtained in transparent pieces, which command a good price. The Angola rubber planters are Europeans with a small capital. *Hevea* and *Manihot* are the trees most cultivated; the latter to a greater extent than formerly. An English syndicate has been formed for the cultivation of rubber in the interior of Benguela, which will also purchase rubber, to be cleaned by machinery.

#### CENTRAL AMERICAN RUBBER STATISTICS.

In commenting upon conditions and prospects of rubber production in Central America, the "Revista Economica," of Costa Rica, quotes the following statistics of exports for the years 1907 to 1909:

|                     | 1907. | 1908. | 1909. |
|---------------------|-------|-------|-------|
| Nicaragua .....Tons | 296   | 284   | 205   |
| Guatemala .....     | 180   | 146   | 172   |
| Costa Rica.....     | 58    | 42    | 66    |
| Honduras .....      | 45    | 35    | 58    |
| Salvador .....      | 30    | 25    | 30    |
| Total .....         | 609   | 532   | 531   |

The importance is urged, for the purpose of maintaining the Central American rubber production, of adopting scientific methods of working. It is added that this does not in all cases imply that methods, which might properly be described as rational in the Dutch Indies or the Far East, should on that account be introduced into Central America for native varieties.

It will be noticed that there was something of a falling off in rubber production in 1908 and 1909 from the figures of 1907. This, however, should not be taken to indicate that the sources of supply are being exhausted, for it is undoubtedly true that there are forests of rubber trees in the various Central American States that have not been touched, and from which considerable quantities of rubber could be taken if they were judiciously operated.

After referring to the difficulties attending the organization of competent agricultural and forest services, the writer in the Costa Rican publication reaches the conclusion that in order to form such organizations, capable of furnishing up-to-date information, it would be necessary to have a rubber bureau, amply endowed, and possessing in its various departments, men of science capable of bringing about a rapid advance in knowledge on the subject of rubber production.

#### MEXICO'S GUAYULE FACTORIES.

According to a recent consular report, fully 70 per cent. of Mexico's guayule rubber production is worked up in the large rubber plants of the Laguna district, chiefly in the cities of Torreon and Gomez Palacio. There are seven such factories in the Laguna district, which have a combined capacity of a little more than 200 tons of guayule shrub per day. The plant of the Continental Mexican Rubber Co., operated by the Rockefeller-Aldrich interests at Torreon, has a capacity more than equal to that of the other six plants operating in the Laguna combined. This immense plant operates 112 large pebble drums, each of which has a capacity for a little more than a metric ton of the shrub per day, or a combined capacity of about 120 tons. This factory gives employment to about 700 men, and is said to be the largest single plant for extraction of rubber in the world. The output of finished rubber from this one plant in 1911 amounted to between 6,000,000 and 7,000,000 pounds, almost all of which found a market in the United States.

#### DJASINGA (JAVA) RUBBER & PRODUCE CO., LIMITED.

For July and August there has been a total yield of 13,100 pounds, while the corresponding period of 1911 only represented 3,113 pounds, a more than four-fold increase being thus demonstrated.

#### LANGEN (JAVA) RUBBER ESTATES CO., LIMITED.

The yield of rubber for August has been 12,500 pounds, as compared with 2,700 pounds for August, 1911. For the 12 months ended with August, the total has been 145,577 pounds; as compared with 8,722 pounds for the preceding annual period.

## NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

## BRITISH GUIANA AT THE RUBBER EXHIBITION.

READERS of these "notes" who visit the exhibition being held in New York will observe a small exhibit from this colony at the Imperial Institute's stand. After the authorities had succeeded in resisting the steady pressure brought to bear upon them, to induce them to secure a separate exhibit of the colony's rubber at the exhibition, it was resolved to make use of the permission accorded to the Imperial Institute, to exhibit in seven-pound samples, types of British grown rubber.

A more detailed description of the British Guiana exhibits at the New York show will be found in the special exposition section in this issue of THE INDIA RUBBER WORLD.

## THE BALATA ASSOCIATION—DISSOLUTION.

At a meeting of the Balata Association held recently, it was resolved to disband. The chairman, Mr. George R. Garnett, pointed out that the Institute of Mines and Forests had recently been strengthened by the addition of various new members, many of them being connected with the balata industry. If the institute could be representative of the whole industry, it would be useless having two associations carrying on practically the same work. This view was endorsed by several members, who paid a tribute to the work performed by Mr. Henry Daley, the honorary secretary. This sudden dissolution is somewhat surprising. It was recently announced that the representatives of the local companies had joined the association and it was thought that it had a long career before it. It was Mr. Henry Daley who created the association and he is about to leave the colony, where he was the last manager of the Essequibo Rubber and Tobacco Estates Company. It is to be hoped that the Institute of Mines and Forests will prosecute the interests of the industry with the same energy as the association.

## BALATA FROM VENEZUELA—SUGGESTED REMOVAL OF THE EMBARGO.

At the same meeting, the question of allowing Venezuelan balata to be shipped via British Guiana was discussed. Such transit trade was prohibited about five years ago, in consequence of the depredations of Venezuelans on the British Guiana side of the boundary. Improper bleeding of colony balata, which was shipped as Venezuelan, was rampant. It has since been thought, however, that complete prohibition was a somewhat too drastic remedy, and at this meeting the Balata Association endorsed that view. Some interesting information on the matter was supplied recently by General Federico R. Matthews, late governor of the Venezuelan territory on the British Guiana boundary, who was visiting Georgetown. He stated that there are large tracts of land, rich in balata in the territory, which have no outlet at present. The way over the inland rivers via Bolivia is too long to be profitable. The way via Morawhanna in British Guiana is prohibited. If that embargo were removed a company would be formed to exploit the balata resources of the territory. This embargo and the decline of the industrial enterprises in the northwest district of the colony have reduced the township of Morawhanna to a state of stagnation, and opinion in favor of the removal of the prohibition is growing.

RUBBER TAPPING IN THE NORTHWEST—CURIOUS PERFORMANCES OF *HEVEA CONFUSA*.

At a recent meeting of the Board of Agriculture Mr. Stackdale reported upon some tapping experiments in the northwest district, undertaken in June, July and August. Eighty-nine trees were taken, none under 16 inches in girth. Those less than 18 inches were given two basal cuts and those over 18 inches were tapped after the half herring-bone system. July's returns were better than June's, and August's better than July's. The results with *Sapium* were not very encouraging.

At the same meeting Professor Harrison reported that a sample of *Hevea confusa* rubber exhibited in London last year,

had been sent to the Imperial Institute for analysis, which reads as follows: Loss on washing, 1.4 ounces; caoutchouc, 93.3; resin, 1.8; proteid, 4.9; ash, 1.0. The analysis was as good as if the sample was good rubber and worth 4s per pound. When first prepared, however, it had no elasticity and would break if pulled, but it had since got a feeble degree of strength. Nothing could be done with the tree, which was very old. The yield was small and the tree would soon run dry. The importance of the matter was that they should keep the tree out of cultivation, so as to prevent it making hybrids with good rubber.

## IMPORTATIONS OF RUBBER SEEDS—INTERESTING STATISTICS.

A table has been published in the *Official Gazette* showing the number of Para rubber seed imported by the government between the years 1905 and 1911. Of 366,848 seeds received, 234,598 germinated; the cost of shipment amounting to \$2,754.80. In 1905 a sample shipment of 50 seeds was received from Para, Brazil, but none germinated, and in 1906 of 25,062 seeds received from Ceylon, from the Botanic Gardens of Ceylon and Singapore, 2,000 seeds germinated. In 1907 63,850 were imported from the Botanic Gardens of Singapore and Ceylon, and 49,700 germinated. In 1908 of 50,000 seeds imported from Singapore, 43,150 germinated. In 1909 of 30,131 seeds, 21,609 germinated. In 1910 there were two shipments, the aggregate number of seeds being 85,155, of which 59,350 germinated. In 1911 89,679 seeds were obtained from Singapore and Ceylon, and 43,757 only germinated; of a further shipment of 19,921 seeds obtained from Mr. J. H. Richards, 15,024 germinated.

## THE OLDEST "HEVEA" IN BRITISH GUIANA.

TIME was when Ceylon boasted only two or three mature *Hevea* trees. Those trees today are giants, are great producers of rubber, and often photographed and described. It is well therefore as a matter of record to show the oldest *Hevea*

OLDEST *Hevea* TREE IN BRITISH GUIANA.

tree in British Guiana. This tree is already the parent of many others, and some day will probably be historic. Of the figures at the base of the tree, the one at the right is Professor Harrison, Director of Agriculture of British Guiana.

## The Editor's Book Table.

ANNUAL REPORT OF THE UGANDA DEPARTMENT OF AGRICULTURE, for year ending March 31, 1912. Entebbe, 1912. (4to, 36 pages.)

THROUGH the courtesy of S. Simpson, Director of Agriculture, THE INDIA RUBBER WORLD has received a copy of the above-named annual report, dealing with rubber, cotton, coffee, cacao, and the other products of the Protectorate.

According to the details given the area planted with rubber is extending rapidly, the *Hevea* tree leading the way. The area planted in the various rubber trees are:

|                                 | Acres. |
|---------------------------------|--------|
| <i>Hevea Brasiliensis</i> ..... | 3,000  |
| <i>Manihot Glaziovii</i> .....  | 750    |
| <i>Castilloa elastica</i> ..... | 85     |
| <i>Funtumia elastica</i> .....  | 24     |
| Total .....                     | 3,859  |

The total acreage of the European plantations in Uganda is about 6,000 acres, of which nearly 4,000 are thus in rubber; there being about 2,000 in coffee and 200 in cacao.

Rubber exports have been approximately as follows:

|                            | WILD RUBBER.<br>Pounds. | PLANTATION RUBBER.<br>Pounds. |
|----------------------------|-------------------------|-------------------------------|
| Year ending March 31, 1909 | 42,600                  | .....                         |
| Year ending March 31, 1910 | 94,500                  | .....                         |
| Year ending March 31, 1911 | 89,800                  | 55,200                        |
| Year ending March 31, 1912 | 27,700                  | 210,200                       |

Plantation trees are thus evidently yielding increased quantities of rubber.

Ceara has found favor with various planters, but some of them are beginning to grow skeptical as to its merits. As shown by above table *Hevea* and *Manihot* are at present the only rubber producing trees of any importance in Uganda.

ANNUAL REPORT OF DEPARTMENT OF AGRICULTURE, TRINIDAD and Tobago, 1910-1911. (Special Bulletin.) Trinidad, 1911. (4to. 73 pp.)

According to this interesting report, the rubber industry has of late received a much larger amount of the department's attention than had been the case in previous years. Reference is likewise made to the experiments carried out with the centrifugal machine of H. Smith, of Tobago, who had visited Mexico and Central America. The *Castilloa* rubber industry has been materially stimulated by Mr. Smith's report on the subject.

A. E. Collens has devised a simple method of coagulating and smoking *Castilloa*, by which he has produced some fine specimens.

As a record of the work of Professor Carmody, the director and his associates, this report has a distinct interest, while its ample statistical material is thoroughly well handled.

COCO-NUTS: THE CONSOLS OF THE EAST. BY H. HAMEL SMITH and F. A. G. Pape, London. 1912. "Tropical Life" Publishing Department. [Cloth. 50s pp.]

To those who have not followed the progress which has marked the development of tropical agriculture, the above work will afford a mass of information upon the subject. A specially practical feature of the book consists of the suggestions made by the authors as to the management of large estates on which cocoanuts flourish. In fact, the work will be found indispensable by planters interested in that branch, being an exhaustive and complete study of the coconut palm. The questions of nurseries,

manuring and diseases are treated in detail, as well as catch-crops.

Another important feature of the work is the discussion of the utilization of the products and by-products of cocoanuts, including coprah, fiber and oil, as well as the possibilities of paper making. How to deal with everything that can be made to pay is the point kept steadily in view by the authors, and brought out with perspicacity and clearness.

While rubber is dealt with more or less incidentally, the references to that subject have a distinct interest, particularly as to interplanting. Regarding Samoa and New Guinea, it is stated that interplanted cocoa and rubber have been tried with doubtful success, such a plan not being recommended. At the same time this combination would, it is remarked, restrict disease and distribute financial risks, if the soil and climatic conditions were suitable.

As to Papua, it is of interest to note that out of 7,740 acres under cultivation, 5,365 acres are in cocoanuts and 1,702 acres in rubber.

In North Borneo, large areas have been planted in rubber, and appear to be doing well. Moreover, land is still being planted up with rubber and other crops, so rapidly that additional labor is needed.

HANDBOOK FOR INDIA-RUBBER ENGINEERS, by Dr. Werner Esch, Editor of the "Gummi-Markt." Hamburg. 1912. [8vo, 135 pp., cloth.]

One of the chief requirements of a technical work is that the information contained should not only be accurate and reliable, but that it should be expressed in concise form. This has been accomplished by Dr. Werner Esch in the above-named handbook intended for the guidance of those whose occupations or interests call for more or less detailed knowledge of the production and preparation of rubber. As described in the subtitle it is "a practical manual for manufacturers, chemists, works managers, and commercial men in the rubber and allied trades."

Starting with the varieties of crude rubber, which are treated in detail, the physical and chemical properties of rubber are next discussed. Then follow the chapters dealing with the mechanical cleaning of crude rubber, including washing, deresination and drying.

The following section treats of the further working up of the dried rubber, conducting the reader through the processes of mixing, weighing and calendering. In natural sequence, the subject of vulcanization is then handled, with references to vulcanizing heaters and sulphur bath installations. Next in order come the vulcanization of proofed fabrics and the cold vulcanizing shop.

Finally, compounding ingredients for rubber compounds are dealt with, in connection with which subject a number of standard mixing formulae are given. The descriptions of machinery used in the rubber industry are supplemented by effective illustrations.

It is of material importance, considering the scope of the subjects treated, that Dr. Esch has written in English; the value of his work being thus considerably enhanced. The whole treatment of the subject reflects credit upon its author, and will add to his established reputation as a rubber chemist.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Tires and All About Them; Rubber Trade Directory of the World.



## NEW TRADE PUBLICATIONS.

IN commemoration of the fiftieth anniversary of the Franz Clouth Rhemish Rubber Factory of Cologne, a festival souvenir volume has been issued, which is a notable example of typography and illustration. Various interesting statistical data are supplemented by a chart representing the movement of rubber prices from 1861 to the present time.

The personal features of the volume are represented by a full description of the works, embellished with a number of illustrations, representing the various portions of the installation and the chief manufacturing processes. The reader is conducted in imagination through the processes of washing, mixing and vulcanizing, as well as the manufacture of hose, belting and other products; including roller-coverings and diving appliances. Rubber tiling also constitutes a prominent feature of the firm's production; having been supplied for the smoking saloon of the "Prinz Wilhelm," which is effectively illustrated. The frontispiece is a portrait of the late Herr Franz Clouth, the founder of the firm, whose history is graphically told.

Under the title of "Merck's Analytical Methods for Testing Analytical Reagents," Merck & Co. have issued a handy booklet containing a full price list of their "Blue Label Reagents," indicating their analyses, and the tests to which they are intended to apply. The alphabetical order in which the various reagents are treated, facilitates reference and renders this little book a *vademecum* for the busy chemist and analyst. To those already using Merck's chemicals, it will recall familiar compounds, while to those contemplating the extension or improvement of laboratories, it will serve as a useful guide.

The B. F. Goodrich Co. has just issued a manual of tire repairing with complete descriptions and full illustrations sufficient to give professional repair men full information as to materials to be used and methods to be pursued in the repair of pneumatic tires. The information therein contained is based on the experience of the oldest and most complete repair departments in existence. The methods mentioned therein are applicable to ordinary shops.

The monthly publication of "The Goodrich" for September, their birthday number, contains an excellent article by Alexander P. Rogers, entitled, "In the Heart of South America—Part Second," which gives a vivid account of the country bordering the Madeira River and of the difficulties overcome in surveying and building a railroad around the rapids in that turbulent river. It also contains a map of Europe, giving the Goodrich service abroad. The September issue numbers 46,000.

## NEW TENNIS LIST FOR 1912 AND 1913.

The United States Rubber Co. has issued its tennis lists for the year beginning September 1, 1912. These lists follow the usual form, being about 3½ inches x 6 inches, a convenient size for mailing in the ordinary envelope.

Three different lists are issued by the company, one entitled, "The United States Rubber Company's Tennis, Yachting, and Gymnasium Shoes"; the second entitled, "Tennis-Glove Brand"; and the third, "Lycoming and Keystone Tennis and Gymnasium Shoes."

The first list describes and illustrates the company's Tennis, Yachting, "Champion" Gymnasium, Bathing, and Basket Ball shoes, most of these being made in Oxfords and bals.

The "Glove Brand" price list describes and illustrates the "Bon Ton," Outing, "Racquet," "Marblehead," and "Athlete" shoes, being similar in character to those shown in the list described above.

The Lycoming list includes yachting, gymnasium, and a general tennis shoe called "The Rival."

## FIRE HAZARDS IN RUBBER MANUFACTURE.

IN an article on "Rubber Manufacture," with particular reference to the fire hazards attendant upon the making of mechanical rubber goods, written by L. Alexander Mack, for the *Weekly Underwriter*, of June last, the following paragraphs appear; which will be of interest to all rubber manufacturers:

## THE FIRE HAZARDS.

"The greatest hazard in the manufacture of rubber products is not the rubber itself but its solvents. 'Rubber cement,' as it is commonly called, is composed of pure rubber, cut fine and softened in carbon dioxide, after which this mixture is dissolved in benzine, making a powerful adhesive. The dangers of volatile fumes of benzine are well known to every underwriter, and the danger from careless use of rubber cement cannot be too strongly emphasized. The inspector should devote particular attention to this material, first, as to its storage, and, secondly, as to its actual use. It is worth noting, however, that once the cement has been applied and becomes dry, the danger point appears to have been passed.

## STORAGE OF RUBBER CEMENT.

"Manufacturers realize that with a costly product like rubber cement it is important that every gallon purchased should be used. This result cannot be obtained when the wooden barrel which has served for its transportation is afterward used for storage. Such a barrel is more or less porous, and so in the best plants the cement is at once transferred to metal tanks, buried underground at least thirty feet from any building. This is the only safe and approved method of storage of rubber cement. The inspector should satisfy himself that only a day's supply of cement is kept in the factory at one time, and this must be kept in self-closing metal cans. It seems almost needless to say that smoking should be prohibited within any portion of a plant where such material as rubber cement is used in almost every department.

## STATIC ELECTRICITY.

"Next to the hazard of rubber cement is the danger from static electricity. Instances are of frequent occurrence, where in moving a sheet of rubber-lined cotton duck or belting across a table top enough static electricity is developed to generate a good sized spark. This is extremely dangerous if there is any rubber cement nearby. The best safeguard against this hazard is to have all tables in this department 'grounded'—a simple expedient within the reach of every manufacturer.

## BUFFING.

"Some attention should be given to the department where buffing is carried on. The fine dust, here given off, though composed partly of rubber, has an admixture of lint from the buffing wheels themselves. This finely divided material if allowed to accumulate would make an excellent subject for spontaneous combustion, especially if left where any grease or oil could drop on it. Complete blower systems should be installed to carry the dust direct to the boiler room, where it should be destroyed as soon as practicable. There is very little danger of the friction of the buffers developing enough heat to set fire to any fumes of benzine in this department.

## STORAGE AND WASHING.

"The storage of crude rubber under suitable conditions does not present any undesirable features from the underwriter's viewpoint. Nor does the process of washing, for, in spite of the frequent presence of foreign substances, water is so necessary an adjunct to this process as to make fire an impossibility at this stage of the work.

The rubber manufacturer thus need not fear the risk of fire through the storage of crude rubber, or the processes incidental to purification.

## CHEMICAL ROOM.

"The chemical room should be carefully inspected to make sure that all chemicals are stored in standard self-closing bins of lock-jointed tin. The best mills store their chemicals in a separate building from which the boxes containing mixed chemicals and raw rubber stock are conveyed by a belt to the mixing machines. Lampblack is a decidedly dangerous substance, composed almost entirely of carbon. If it becomes damp it will heat up sufficiently to char its paper wrappings, or the paper linings of barrels in which it is shipped, and if left long enough will eventually set fire to the barrel itself. Barium sulphate is a rapidly oxidizing metallic substance which is a frequent source of trouble if allowed to become damp; carbon disulphide is a liquid similar to benzine in its volatile and explosive qualities. There is danger also from unslaked lime becoming slaked and setting fire to things about it. Sulphur is not bad, and there is no danger from whiting, paraffin or litharge.

## MIXING AND CALENDERING.

"In the mixing process the underwriter will find little or no special hazard, as a high temperature would spoil the rubber. The temperature of the mixing rollers is maintained at about 176 degrees Fahr., and steam heat is now almost universally employed.

## VULCANIZING.

"The fire hazard from the vulcanizers themselves cannot be said to amount to anything more than the usual steam pipe hazard, steam being the medium now employed in vulcanizing in practically all factories. With the boiler house properly isolated and the vulcanizers set on metal, and with all surrounding woodwork protected with metal sheathing, the hazards of the vulcanizer can be reduced to a minimum.

## RECLAIMING HAZARDS.

"The hazards of the reclaiming house are chiefly those of the storage of chemicals. Sulphuric acid, nitric acid and caustic soda are the chemicals principally used. All are dangerous unless kept in approved receptacles, preferably in a detached building. The machinery and arrangement of the reclaiming plant present no more serious hazard than that the floors must of necessity be pierced in numerous places to facilitate the handling of the reclaimed material, thus making a total loss on this structure a high probability if fire once gets a start.

## MISCELLANEOUS.

"As before indicated, the hazard of oily waste and lint is to be looked for in the department where jackets are woven for hose. Self-closing metal cans should be provided for waste in this department. Large plants frequently run their own printing establishments, the hazards of which have been pointed out in another article in this series. Benzine is the dangerous substance here, and should be kept in patent safety cans and only a day's allowance kept in the shop at one time.

## OTHER RUBBER INDUSTRIES.

"While this article will not deal with the hazards to be found in factories making rubber clothing, boots and shoes, tires and druggists' sundries, it will be well to note that the hazard in the clothing industry is chiefly in the spreading of the daub, which is virtually a rubber cement mixture. Static electricity is the dangerous feature here. In the boot and shoe industry the lacquering room seems to be the source of most trouble. Here the lacquer, composed of highly inflammable materials, is 'slathered' over the boot or shoe by hand, and the article is at once put on a rack and taken into the drying room, where a high temperature prevails. Trouble may frequently develop here.

## FIRE PROTECTION.

"A full equipment of fire pails, extinguishers, standpipe and hose, and, above all, a thorough sprinkler equipment will do much toward making rubber works profitable to the underwriters. Good housekeeping is, of course, an essential to every well organized factory, and should be insisted upon by the inspector at all times.

"In closing we desire to acknowledge the courtesies extended to us in the preparation of this article by the Manhattan Rubber Manufacturing Company, THE INDIA RUBBER WORLD, the Insurance Society of New York, the Biggs Boiler Works Company of Akron, Ohio, and the Birmingham Iron Foundry of Derby, Conn."

## A TIRE KETTLE AND TREAD ROLLING MACHINE.

THE WILLIAMS FOUNDRY AND MACHINE CO., of Akron, Ohio, has recently put on the market a boltless, quick-opening tire kettle that has sufficient capacity for all except the very largest shops. It measures about 43½ inches inside



THE WILLIAMS TIRE KETTLE.

diameter in the clear, and the curing space is 16 inches high above the bottom grating, making capacity for about four tires 42 inches or smaller at a time. The kettle and lid are made of open hearth cast steel, tested with 200 pounds hydraulic pressure



TREAD ROLLING MACHINE.

and 75 pounds steam pressure, making it safe for any condition of service. The crane head handling device and bottom grating which keeps the tires out of the water, and permits the steam to circulate all around the tires, overcome the common objections to vertical kettles. The boltless head saves so much time and labor that a retreaded tire can be cured with as little trouble as a sectional repair in a mold—a very obvious advantage.

This company is also placing on the market for the use of repair men who are retreading tires, a tread rolling machine that will enable the repairmen to roll the fabric much harder than it can be done by hand. The upper or concave roll is raised by means of a large hand wheel, and the tire inserted between the rolls. The desired pressure is applied by screwing down the hand wheel. The heavy oil tempered steel springs which roll the convex roller insure even pressure, and turning the crank causes the tire to turn between the rollers.

## New Rubber Goods in the Market.

### WATERPROOF COATS FOR THE NEW SEASON.

**H**ERE are four new waterproof coats, taken from the offerings for 1912 and 1913 of the Greenhut-Siegel Cooper Co., of New York. They give a very good idea of the sort of rubberized garments that the women are expected to wear this winter.

Describing them from left to right they are briefly as follows:

No. 1 is made of serge or cravenette and guaranteed shower-proof, but not being rubberized cannot be guaranteed as a sufficient protection against pelting rain. This is made in semi-fitted style with tailored seams and has a mannish collar and patch pockets which serve further to set it off. It comes in Oxford grey and tan.



SOME 1912 RAINCOATS FOR WOMEN.

No. 2 is a tourist raincoat made of imported rubberized diagonal tweed in the Raglan style. This garment can be worn in any weather and is suited for a general traveling coat or automobile wrap. This is made in grey, black, and black and brown diagonal.

No. 3 is made of rubberized cashmere, fashioned in the loose slip-on style, with high turnover collar and is made in olive green.

No. 4 is made of mercerized poplin rubberized and is cut in the English box style. All the seams are cemented with pure rubber, making them absolutely watertight. This garment is made in navy blue, grey and black.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

### A COLLAPSIBLE PAIL FOR MOTORISTS.

This collapsible pail isn't in reality new, for it has been on the market for several years, but it probably is new to a good many people who tour around in motor cars; and all such will



A COLLAPSIBLE RUBBER PAIL.

be glad to know about it. It is made of rubber cloth, well coated to avoid leaking. It is light, and when collapsed only stands 2½ inches high. When extended for use, it stands 11 inches high, and holds 2½ gallons of water. Any motorist who has found his radiator running dry, and not a house in sight, and has tried to convey water from a

running brook in his hat, knows how much he would have given under those conditions for any sort of a pail. [The B. F. Goodrich Co., Akron, Ohio.]

### CUTTING PAVEMENTS WITH PNEUMATIC HAMMERS.

One of the most frequent sights in city streets, particularly in the streets of our older cities, is the taking up of hard pavement—



CUTTING ASPHALT BY COMPRESSED AIR.

asphalt or concrete—for the purpose of putting in new pipes or wires or rails, or repairing those that are already there.

It is no easy task to take up an asphalt pavement. It is almost as hard as iron, and the old regulation method of doing it by hand with a gang of men and picks is slow, expensive, and not very satisfactory in any way, particularly where it is desirable to follow a straight line and make a clean edge. To obviate the disadvantages of hand work in taking up these hard pavements, considerable ex-

perimenting of a very successful character has recently been



done with pneumatic hammers. A gas company in Brooklyn, New York, has found this method greatly preferable to the old way. They have a portable air compressor on a large flat-wheel truck; from this run rubber pipes conveying the power to the pneumatic hammers. The tools used are chisels with an edge somewhere from  $\frac{1}{4}$  inch to  $1\frac{1}{2}$  inches in diameter. It has been found that a workman with a pneumatic hammer can accomplish as much as four or five workmen by the old method, and more than that, a straight chalk line can be drawn which the pneumatic hammer follows absolutely, making a clean-cut edge.



PNEUMATIC HAMMERS CUTTING CONCRETE.

The experiment with the pneumatic hammer was thoroughly tried not long ago in the streets of Zurich, Switzerland, which were paved with a ten-inch thickness of concrete. It was found necessary to take up the rails of a street car track, and the pneumatic method was adopted with great success. A recent number of the "Compressed Air Magazine" has a more detailed account of both of these experiments illustrated with a number of cuts made from photographs, two of which, through the courtesy of that magazine, we here reproduce; the first cut showing a single workman chiseling out a line in an asphalt pavement, while the second cut shows a group of workmen taking up a concrete pavement in Zurich. Hard as asphalt is, this pneumatic chisel cuts into it and turns it over as if it were a piece of leather.

#### GOODRICH "LUMINA" AEROPLANE CLOTH.

The B. F. Goodrich Co. appears to have made very considerable headway with its new "Lumina" aeroplane cloth. It will be recalled by those who visited the recent New York Aero Show, that Wright and Curtiss both had aeroplanes there on exhibition in which this particular cloth was used. The Curtiss hydro-aeroplane recently purchased by the Russian Navy, and the Burgess biplane ordered by the United States Army, both are constructed with "Lumina" cloth.

"Lumina" is a handsome fabric, made from the finest long staple cotton, coated several times over with high-grade rubber solutions of various consistencies, and on one side again covered with aluminum. It becomes to all intents and purposes wind and weather proof.

The making of a suitable fabric for aeroplane purposes involves several novel conditions. The scantling of a plane is so slight that any warping or shrinking of the fabric will infallibly distort the frames, throwing them out of line and upsetting the true direction of flight. In "Lumina" these contingencies have been provided for, as it will neither shrink nor stretch. The rubber

coating and aluminum covering are incorporated with the fabric, making it impervious to climatic influences; with the further advantages that it does not crack nor show dirt, while repairs may be readily executed with ordinary cement and without disfiguring the fabric.

"Lumina" cloth is made by the Goodrich company in its factory at Akron, Ohio, by special arrangement with the Continental Company of Hanover, Germany.

#### A RUBBER COAT FOR YOUR STRAW HAT.

There is nothing that fills a good man with more sorrow, or drives a wicked man to more profanity, than to pay \$3.50 for a superior straw hat, and then immediately thereafter get caught in a pelting rain, and have the handsome, crisp, new headgear turned into a limp candidate for the dump-heap. And that really

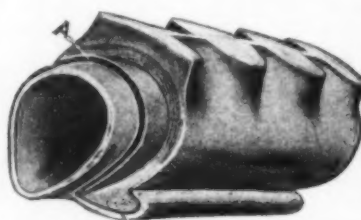


STRAW HAT WITH RUBBER COVER.

isn't at all necessary; for here is a rubber hat cover, which weighs next to nothing, and can be rolled up and tucked into a corner of a pocket; and yet, when occasion demands, can be taken out and in a second's time can be adjusted over the straw hat, so that it will go through the fiercest downpour without even getting moist. As some inventive genius has already made it possible to get a pair of rubber footholds so light that they can be conveniently carried in the pocket, if somebody else would only invent a spider-web rubber coat that could be carried in the same way, a man would only need three pockets to be able to carry adequate protection with him, wherever he went against the worst elements might do. [National Rubber Hat Protector Co., Nashville, Tennessee.]

#### THE STEPNEY ROAD GRIP TIRE.

The annexed illustration displays in section the extremely heavy rubber tread of the "Stepney Road Grip Tire," the large flat projections in which form an excellent preventive against



slipping, as they, to a certain extent, adhere to the surface of the road, while their rounded form casts on one side the stones and other objects which may come in the way. The thickness of the projecting portions tends to prevent nails

and other sharp substances from penetrating the surface of the tire or the inner layers of linen, thus imparting a marked capacity of resistance.

Another specially made by the same concern is the "Stepney Tire Cover." This cover, it is claimed, permits the use of old, torn, or burst tires, instead of their being thrown away or sold as old rubber. It is shown in position A on annexed illustration, and is made of heavy linen impregnated with rubber, fitting the tire. With burst tires, it is recommended before putting on the cover to patch the hole with a linen rag and to vulcanize the surface or to apply rubber solution, so as to prevent water or dirt from getting in. [Stepney Auto-Reserve Wheel Tire Co., Limited, Berlin, 39.]

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

## News of the American Rubber Trade.

### COLONEL COLT BACK FROM EUROPE.

WHEN Colonel Samuel P. Colt, president of the United States Rubber Co., returned on the *Olympic* September 5, after a short visit to Europe, taken primarily to attend the wedding of his son, Roswell C. Colt, and incidentally devoted to the advancing of certain large enterprises in which his company is interested, he was met at the dock by various reporters of the New York dailies. In reply to their questions he gave his views on a number of subjects, predicting the re-election of President Taft, and stating that the Republican party of Rhode Island were united on his brother, Judge LeBaron C. Colt, to succeed Senator Wetmore in the United States Senate; but the paragraph of particular interest to the readers of this journal referred to certain important rubber matters. He is quoted by one of his interviewers as follows:

"While my trip has been primarily for pleasure," said Colonel Colt, "I have given time and attention to important matters in connection with the United States Rubber Co. One of these was an application to list \$10,000,000 of our first preferred stock on the Parquet of the Paris Bourse. The negotiations are progressing satisfactorily and, I am confident, will be consummated within a reasonable time. This will be the minimum amount and it will be increased from time to time as the original offering is absorbed.

"I also gave attention to our crude rubber interests in the Far East. On one estate there we already have 25,000 acres planted. We are now putting out on an average 1,000 trees a day and we will continue at about this rate until we have 50,000 acres planted on that one estate. We shall begin to get rubber from our trees within the next two or three years."

### ANNUAL MEETING OF THE FIRESTONE COMPANY.

Stockholders of the Firestone Tire and Rubber Co. held their annual meeting on September 4. The directors declared a 10 per cent. dividend on the common stock for the ensuing year, and a 7 per cent. dividend on the preferred.

After the dividends had been declared it was found there was nearly a million dollars in surplus. This will be used to expand the business, and to establish new branches. The year ending August 1 was the most successful in the history of the company, the gross receipts totaling \$1,189,000.

The same officers and directors were elected at the meeting to serve for another year, namely: H. S. Firestone, president; Amos C. Miller, Chicago, vice-president; J. G. Robertson, treasurer, and S. G. Carkhuff, secretary. The capital stock of the company will remain the same, one million in preferred and three million in common.

### THE RUBBER BALL PLAYERS TAKE THE CUP.

The Hub Athletic Association, composed chiefly of young men connected with the New York office of the United States Rubber Co., has during the last two or three years entered a baseball team against other members of the Shoe Baseball League. In the season of 1911 the Hub club was tied with the Morse and Rogers team, and the tie was to be played off during the past summer for the championship cup; but as the Morse and Rogers team was not able to get together with its original membership, the cup has been awarded to the Hub Athletic Association. The president of this association is Mr. Richard S. Harding, head of the mailing department of the United States Rubber Co., and the treasurer is the company's advertising manager, Mr. William H. Palmer.

### TIRE COMPANY INCORPORATED IN MAINE.

The Hallett Vehicle Tire Co. has been incorporated under the laws of Maine to manufacture rubber tires for automobiles and

other vehicles. The headquarters are at Augusta, Maine. The president is L. J. Coleman, and the treasurer G. E. Beane.

### THE WILKIE COMPANY BECOME THE SAGAMORE.

It was voted at a special meeting of the stockholders of the Wilkie Rubber Manufacturing Co., Lynn, Massachusetts, held August 23, 1912, to change the name of the company to the Sagamore Rubber Manufacturing Co. All obligations due to and by the Wilkie Rubber Manufacturing Co. are payable to and by the Sagamore Rubber Manufacturing Co.

### THE FISK SALESMEN HOLD A CONFERENCE.

The salesmen of the Fisk Rubber Co., Chicopee Falls, Massachusetts, had a three days' conference, from September 11 to 13 inclusive, at the head office of the company, for the purpose of discussing the policy for the coming season, and with the further object of getting acquainted with the company's plant and with one another.

### WALLACE L. GOUGH RETIRES.

Wallace L. Gough Co., under date of September 14, has sent out the following letter announcing the retirement from that company of Wallace L. Gough. "We wish to inform you that our former treasurer, Mr. Wallace L. Gough, has sold his interest in the Wallace L. Gough Co., and that our former vice-president, Edward Weber, has been made the general manager of the concern.

The board of directors will consist of Edward Weber, president and treasurer; Cornelius Schroeter; Willy Kemmler, secretary.

All checks, notes, drafts or other obligations of the corporation will be signed by Edward Weber, as treasurer, or in his absence or disability by both C. Schroeter and W. Kemmler as directors.

### RUBBER MEN AT THE CARRIAGE CONVENTION.

The Fortieth Annual Convention of the Carriage Builders' National Association was held on the famous Million Dollar Pier, Atlantic City, from September 23d to the 27th. In connection with this convention there was an exhibition in which the following manufacturers of rubber tires and other rubber articles took part: Diamond Rubber Co., Akron, Ohio; Fabrikoid Works, Wilmington, Delaware; Fairfield Rubber Co., Fairfield, Connecticut; Federal Rubber Manufacturing Co., Milwaukee, Wisconsin; Firestone Tire and Rubber Co., Akron, Ohio, and Goodyear Tire and Rubber Co., Akron, Ohio.

The Acushnet Process Co., New Bedford, Massachusetts, is adding a new building to its plant and otherwise making improvements in its factory.

### OVER A THOUSAND TONS OF SCRAP RUBBER A WEEK.

The Loewenthal Co., New York, sold during the week ending September 14th over a thousand tons of scrap rubber—the actual weight being 2,118,000 pounds. On the hypothesis that the volume of scrap rubber sold is an excellent criterion of the rubber business being done in this country, these sales would indicate that the general trade is in very good condition.

### TIRE MAN MAKES A GOOD SUGGESTION TO INNKEEPERS.

One of the officials of the United States Tire Co. passes along to the public generally and to keepers of way-side inns in particular a suggestion that comes to him from the owner of an automobile who is fond of touring around the country, as most automobile owners are, and naturally likes to stop from time to time at some proper house of refreshments. This man complains that the average automobile innkeeper acts as if he wanted all the money his guests could possibly raise, on the theory that this would be his last chance at him. Moderate and reasonable prices would certainly encourage tourists to patronize road houses much more than they do, and would therefore be ultimately for the benefit of innkeepers.

## NEW INCORPORATIONS.

Amazon Rubber Smoking Machine Co., September 13, 1912; under the laws of New York; authorized capital, \$5,000. Incorporators: Charles T. Green, 2 Rector street, New York; Edwin B. Griffin, 337 West Fourteenth street, New York, and Ernest M. Morrison, 206 Lincoln avenue, Brooklyn, New York. Location of principal office, New York.

Automobile Tire Filling Sales Co., August 24, 1912; under the laws of Delaware; authorized capital, \$1,000,000. Incorporators: George G. and Oscar W. Stiegler, and William F. O'Keefe—all of Wilmington, Delaware. To buy, sell and generally deal in rubber goods of all kinds and to fill rubber tires and many other things.

The California Rubber Co., August 23, 1912; under the laws of California; authorized capital, \$5,000. Incorporators: C. C. Booth, W. D. Walsh and William C. Earhuff—all of Los Angeles, California. To deal in manufactured rubber goods.

Empire Essenkay Co., September 13, 1912; under the laws of New York; authorized capital, \$10,000. Incorporators: Herman C. Cowen, John W. Cumming and Howard C. Wilbur—all of Catskill, New York. Location of principal office, Albany, New York.

Englebert Tyre Co., September 13, 1912; under the laws of New York; authorized capital, \$100,000. Incorporators: Samuel K. Kellock, 135 Kenmore place; Clarence B. Campbell, 16 Sydney place—both of Brooklyn, New York; and Edward W. Elverson, 82 Beaver street, New York. Location of principal office, New York. To deal in automobile and other tires.

Hallett Vehicle Tire Co., August 17, 1912; under the laws of Maine; authorized capital, \$500,000. Incorporators: C. L. Andrews, L. J. Coleman and G. E. Beane—all of Augusta, Maine. To manufacture, buy, sell and deal in rubber, vegetable oils, substances for making artificial rubber and the like; to manufacture, buy, sell and deal in automobile tires, shoes, fillers, etc.

Hudson Raincoat and Duster Co., August 26, 1912; under the laws of New York; authorized capital, \$6,000. Incorporators: Max Klein, 29 St. Marks place; Fischel Karp, 106 Avenue D, and Leon Wieselthier, 1341 Teller avenue—all of New York. Location of principal office, New York. To manufacture rubberized and other clothing.

Link Shoe Co., September 4, 1912; under the laws of New York; authorized capital, \$10,000. Incorporators, Nathan Blyn, 27 East 124th street; Jacob Blyn, 22 Mount Morris Park, West, and Henry Blyn, 316 West 51st street—all of New York. Location of principal office, New York. To deal in leather and rubber goods.

The New England Rubber Reclaiming Co., August 26, 1912; under the laws of Massachusetts; authorized capital, \$25,000. Incorporators: Paul Miller Broomfield, 121 Crawford street, Roxbury; Mary C. Cavanagh, 59 Olney street, and Harry Klein, 128 Chambers street, Boston—all of Massachusetts. To buy, sell and manufacture rubber, rubber waste, and rubber goods and merchandise.

Paragon Rubber Co., September 8, 1912; under the laws of New York; authorized capital, \$5,000. Incorporators: Henry Horowitz, 124 West 117th street; Isadore Samisch, 133 West Twenty-first street, and Alexander Friedman, 220 Henry street, all of New York. Location of principal office, New York.

The Pharis Tire and Rubber Co., August 27, 1912; under the laws of Ohio; authorized capital, \$25,000. Incorporators: Carl, Emma W. and Mabel A. Pharis. Location of principal office, Columbus, Ohio. To manufacture and deal in automobile, bicycle, motor-cycle, etc., tires and manufacture and sell appliances for same.

The Premier Waterproof and Rubber Co., September 4, 1912; under the laws of New York; authorized capital, \$1,000. Incorporators: Ethel Cohan, 109 Ellery street, Brooklyn, New York; George A. Newman, Garden City, New York, and Albert A. Raphael, 23 Morningside avenue, New York. Location of principal office, New York.

Rondout Rubber Co., September 12, 1912; under the laws of New York; authorized capital, \$1,000,000. Incorporators: Harry T. Clews, 115 East Thirty-ninth street; Frank C. Brannan, 327 West 124th street, and William J. Johnson, 1436 Crotona Park, East, Bronx, all of New York. Location of principal office, Kingston, New York.

The Sangha Rubber and Trading Co., August 16, 1912; under the laws of Connecticut; authorized capital, \$50,000. Incorporators: Ewald G. Walker, Morristown, New Jersey; William D. and Laura I. Rorer, both of West Haven, Connecticut. To buy, sell, produce, import and export, manufacture and deal, as principal, in rubber, ivory and goods, wares and merchandise, etc.

United States Tire Sales Co., September 7, 1912; under the laws of New York; authorized capital, \$500. Incorporators: A. G. Thaanum, 13-21 Park Row, New York; Joseph T. Weed, 150 Hicks street, Brooklyn, New York, and Max Greenberg, 32 West 112th street, New York.

## FOUR FINE WAYS TO WEAR OUT TIRES.

Any motorist who has tire money that is burdensome to him and who would like to see the tire factories running with triple shifts, can find relief and promote a worthy cause by adhering to four very simple rules.

The first rule is of course, as everybody understands, to keep the tire only partially filled with air. This is so generally recognized as the best way of disposing of a tire that it needs no further consideration.

The second rule, which is important to observe, is to start the car into full speed and then apply the brakes. If the car can be made to grind along five or ten feet, particularly on a rough road, and this operation be repeated a few times, very noticeable sections of the tread can easily be removed.

Rule three is to stick to street car tracks, particularly attempting to cross them at a very slight angle so that the tire is pointed in one direction and the track constantly trying to pull it in another. Or if it is a country road where there are no car tracks, close adherence to ruts, the narrower and deeper the better, will bring about the same result. An auxiliary to this rule is on all possible occasions to run the car close to the curb, so that the side of the casings will rub as much as possible against the stone. This is a fine discourager of tire longevity.

Rule four is always to keep in mind that corners should be turned at a high rate of speed. This gives the whole tire an effective strain and helps materially to accelerate its pace to the junk heap.

Any motorist who will carefully observe the four rules enumerated above will find himself in a position to have fine new, handsome tires put on his wheels with great frequency.

## A NEW TIRE PLANT FOR COLUMBUS.

The Pharis Bros. Rubber Co., Columbus, Ohio, has purchased the Newark Tire and Rubber Co., of Newark, Ohio, and expects to move the business to Columbus in the near future. New machinery will be added to the plant, so that its capacity for turning out tires will be materially increased. The output of the company will be called the "Pharis" tire, and will be made in two types, a wrapped-tread tire, good for 5,000 miles, and a molded tire with a 3,500 mile guarantee.



## UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for three weeks, ending September 14:

## COMMON STOCK, \$25,000,000.

[The treasury of a subsidiary company holds \$1,334,000.]

Last Dividend (special), July 8, 1912—20%.

|   |                    |          |         |
|---|--------------------|----------|---------|
| Week Aug. 31  | Sales 3,475 shares | High 51¾ | Low 51  |
| Week Sept. 7  | Sales 3,400 shares | High 51¾ | Low 51  |
| Week Sept. 14   | Sales 2,500 shares | High 51¾ | Low 50½ |
| For the year—High, 67½, May 21; Low, 45¼, February 1. |                    |          |         |
| Last year—High, 48¾; Low, 30¾.                        |                    |          |         |

## FIRST PREFERRED STOCK, \$39,824,400.

Last Dividend, April 30, 1912—2%.

|   |                  |           |          |
|---|------------------|-----------|----------|
| Week Aug. 31  | Sales 430 shares | High 108¾ | Low 108½ |
| Week Sept. 7  | Sales 600 shares | High 108¾ | Low 108¾ |
| Week Sept. 14                                       | Sales 510 shares | High 108¾ | Low 108¾ |
| For the year—High, 116, May 20; Low, 105¾, July 25. |                  |           |          |
| Last year—High, 115¾; Low, 104.                     |                  |           |          |

## SECOND PREFERRED STOCK, \$9,965,000.

Last Dividend, April 30, 1912—1¼%.

|  |                   |           |          |
|--|-------------------|-----------|----------|
| Week Aug. 31   | Sales 100 shares  | High 79   | Low 79   |
| Week Sept. 7   | Sales .... shares | High .... | Low .... |
| Week Sept. 14  | Sales .... shares | High .... | Low .... |
| For the year—High, 85½, May 21; Low, 75, January 23. |                   |           |          |
| Last year—High, 79; Low, 66.                         |                   |           |          |

## SIX PER CENT. TRUST GOLD BONDS, \$18,000,000.

Outstanding of the 1908 issue of \$20,000,000.

|  |                |           |          |
|--|----------------|-----------|----------|
| Week Aug. 31   | Sales 38 bonds | High 104¾ | Low 104¾ |
| Week Sept. 7   | Sales 7 bonds  | High 104¾ | Low 104¾ |
| Week Sept. 14  | Sales 38 bonds | High 104¾ | Low 103¾ |
| For the year—High, 105, February 24; Low, 103¾, January 6. |                |           |          |
| Last year—High, 105; Low, 101¾.                            |                |           |          |

## THE GOODYEAR TIRE COMPANY MAKING COATS.

The Goodyear Tire and Rubber Co., Akron, Ohio, has recently embarked upon the manufacture of rubberized clothing

and is now placing on the market a variety of rubber coats, one of which is shown in the accompanying illustration. The fabric, which is imported, is thoroughly impregnated with rubber, and this is done in such a way that the material does not stiffen, even after the coat has been long exposed to a pelting storm and is thoroughly wet.



COAT MADE BY GOODYEAR TIRE AND RUBBER CO.

The mud that is thrown up by the wheel, instead of going off into space to hit any target, human or otherwise, that may be at hand, strikes against the screen and does no damage. Where mud-holes prevail in the roadways of a city, these or similar guards are certainly desirable, but the absence of mud-holes seems even a better and simpler solution of the problem.

## TO KEEP AUTO-BUSSES FROM SPLASHING.

In London they are experimenting with a splash-guard to keep the heavy auto-busses that run through their sometimes muddy streets from disfiguring pedestrians on adjacent sidewalks. These splash guards consist of a screen made of a steel mesh that is hung on the hub of the wheel and drops close to the ground.

## AN ENGLISH MARKET FOR AMERICAN TIRES.

MR. ALFRED HALSTEAD, American consul at Birmingham, England, made some interesting observations on England as a tire market for American manufactures, in a report which he recently sent to the State Department. In Mr. Halstead's opinion, there is an excellent market in the British Isles for American automobile tires, but it will take a crowbar of gold to pry it open. Here's what he says:

"The rapid growth of the automobile industry, the enormous development in the manufacture of motorcycles, and the continued British use of the ordinary bicycle have made the United Kingdom as good a market as there is for rubber tires of all kinds as well as for other articles made of rubber that are required in these industries. There are, naturally, great British firms that make rubber tires of all kinds, and they have also been very successfully introduced by prominent continental makers.

Despite the large sales of American automobiles here, American tires have not been introduced into the United Kingdom to the degree that might have been expected, especially as it is stated that there is more actual rubber in the American article than there is in the British or European product, in which, it is said, there is not more than 7 to 10 per cent. of rubber in the outer casing and 35 per cent. in the inner tube, rubber substitutes and filters being extensively used. If the trade in tires is to be successfully cultivated by United States manufacturers, heavy expenditure for advertising and other introductory measures will be necessary, but should be preceded by investigations as to the exact requirements of the market. American exporters may not understand how important a part in the introduction of tires and motor parts is played by hill-climbing and other tests and races. Every such success is regarded as the best possible advertisement, and it is quite customary for drivers of automobiles or riders of motorcycles to be in the employ of various firms and to be paid a bonus for each win they make.

"If tires are to be introduced by American firms, it will be absolutely necessary for a trained organization to be created in England, and the tactics pursued by British and other makers followed, with such modifications as American sales ingenuity may deem desirable. The thorough introduction of tires by any American company will cost an immense amount of money for advertising, racing expenses, etc., and for many months there would be no return; but if the American tires are as good as they are said to be, and prices right, success, when it comes, will be great, even though delayed by the strong hold of British and foreign tires on this market."

## DETROIT'S 1913 PRODUCTION OF MOTOR CARS.

The Detroit makers of automobiles expect to add a third of a million motor vehicles in 1913 to the number already in existence. A conference was recently held between representatives of the various Detroit manufacturers and representatives of the railroads, with a view to ascertaining how large a freight-car equipment they would have to furnish. After hearing that the automobile makers expected to produce 330,000 automobiles the representatives of the railroads decided that the 1913 Detroit output would require over 100,000 freight cars.

## A RECORD FOR TIRE ECONOMY.

According to the Nebraska papers, there is a certain owner of an automobile who lives in Norfolk in that state, who has driven a car for four years at a total tire expense, covering all repairs, of \$2.70. Of this amount, \$2.35 was caused by a puncture made by a nail. If it had not been for that nail, the four years' tire expense would have been 35 cents, or less than 9 cents a year; and yet so much is said about the high cost of living.

## AN ANNOUNCEMENT EXTRAORDINARY.

There is an original genius in Bridgeport, Connecticut, who styles himself "Chemist Peck, Inventor," who is the inventor of a "Nu-Rubber Tire-Lining" which he describes as follows: "Each Lining provides 1,000 instant, Self-Mending Plugs—Permanent, Unseen, Harmless, becoming a part of the tire; giving usually Double-Life and Value"—and so on, for several hundred more words to the same general effect.

But the "real cream" of his announcement is contained in the following paragraph:

"Ecclesia, New Era, Federation of Nations, United States of the Globe. Initiated and Represented by the Corporation Ecclesia, Stratford on the Ousatonic, Independence Day, July 4, C. D. 1908. Incorporated and Registered Copyright, State of Connecticut, U. S. A., 1908, Merit Certificate and Patent Award by Corporation Ecclesia for Nu-Rubber Tire-Lining. Assigned for Protection and Promotion of Policies and Benefices Mutual and General."

If Nu-Rubber even remotely lives up to its literature, it must be marvelous stuff. Evidently Chemist Peck does not intend to hide his literary light under a bushel.

## DAHL TIRE STOCK INCREASED TO \$6,000,000.

At the annual meeting of the stockholders of the Dahl Tire Co., which was held at Minneapolis early in September, the capital stock was increased to \$6,000,000 and the company reorganized. The new company will take over all the patent rights owned by the old company, and in addition to manufacturing Dahl tires, will also manufacture various tire accessories. The central office will be in New York city, with a branch office in Chicago.

## A NEW RUBBER CEMENT COMPANY.

The Standard Rubber Cement Co., a New York corporation with a capital stock of \$100,000, recently began business in a factory at 772 Humboldt street, Brooklyn, New York. The company expects to manufacture rubber cement of all kinds, but will make a specialty of rain coat and channel cement. An additional enterprise will be the washing and refining of crude rubber for the trade.

## COMPRESSED AIR CUSHIONS FOR AUTOMOBILES.

Comparatively few people, who have heard Josef Hofmann operate on the piano, are aware of the fact that in addition to being a marvelous musician, he is very much of an inventor. He has recently invented an air-cushion automobile. It is being tested in Switzerland, and some are being constructed at the Saurer Machine Works in the district of St. Gall, Switzerland. It is described as follows:

"In place of the usual steel springs it has four brass cylinders for compressed air, resting on the axles under the four corners of the automobile body, and these, by means of pistons and soft leather diaphragms, greatly reduce the swaying and jolting.

"It is claimed for the new invention that it is adaptable to all kinds of roads, regardless of speed or weight of machine; that the air cushions work instantaneously with softness and ease of movement; that there is an entire absence of vibration, as no metal springs intervene between the axle and the car body; that there is almost perfect balance in rounding curves; and that there is as nearly perfect working safety as can be secured."

This Hofmann air-cushion auto has been put to severe tests during a number of months, and has run well towards 5,000 miles over rather trying roads, with results that are said to be very satisfactory. It has made a speed of 40 miles an hour over rough roads.

## PERSONAL MENTION.

Ellsworth F. Norton, of E. F. Norton & Co., Chicago, Illinois, buyers and sellers of scrap rubber, was married on September 10 last to Miss Laura Steffan, of that city.

Miss Maie Elizabeth Spadone, of Brooklyn, New York, daughter of Walter W. Spadone, vice-president of the Gutta Percha and Rubber Manufacturing Co., New York City, was married on September 1 to Hamilton Disston Saxton, of New London, Connecticut.

Mr. Hartman, who had charge of the sheet packing department of the Manhattan Rubber Manufacturing Co., Passaic, New Jersey, died early in September after a short illness.

Albert Weber, of Weber & Schaer, of Hamburg, Germany, recently arrived here on the Olympic, the purpose of his visit being the renewal of many friendships in the trade in this country. Mr. Weber is the vice-president of the "Verein am Gummi Handel Betheligen Firmen"; as well as a promoter and director of many important importing and growing associations. These include: The Gesellschaft Sued Kamerun; Deutsche Kamerun Gesellschaft; Mahesa Rubber Plantations, Limited, and the Anglo Bolivian Rubber Estates, Limited.

I. Henry Hirsch, of Adolph Hirsch & Co., crude rubber importers, sailed for Europe on September 3, by "Kaiser Wilhelm der Grosse."

Mr. William G. Brown, the well-known distributor of rubber manufacturers' supplies, of 701 Provident Bank building, Cincinnati, Ohio, is in New York with the two-fold purpose of placing his daughter, Miss Helen Brown, at Vassar, and attendance at the rubber show now in progress at the Grand Central Palace.

## DR. EDUARD MARCKWALD IN AMERICA.

Dr. Eduard Marckwald, who for the last 12 years has been at the head of the Chemical Laboratory for Commerce and Industry, in Berlin, is now visiting the United States, and expects to remain in this country for the next three or four weeks. He is not only a well known German chemical authority but is especially prominent in the field of rubber chemistry.

## TWO WALPOLE APPOINTMENTS.

The Walpole Rubber Co., of Walpole, Massachusetts, has recently made two new appointments to the selling staff of its New York headquarters at 80 Reade street. Charles O. Anthony, who for the past nine years has been connected with the New York Insulated Wire Co., has been added to the selling force of the New York office, as has also August R. J. Rode, who will be connected with the selling force of the druggists' sundries department.

## THE SUPREME COURT UPHOLDS THE COMPLAINT.

In our last issue we referred to a decision in an action recently brought by a rubber manufacturing company against the National Board of Fire Underwriters. We have ascertained that the decision we there referred to merely called for the reframing of the complaint in the action; and that this was at once done by the plaintiff. The defendant then claimed by demurrer that no sufficient cause of action was shown in the complaint. This has since been argued before the Supreme Court, and a decision has been rendered holding the complaint to be good.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

**TO MAKE RUBBER GREASE-PROOF.**

The Starkweather & Williams Co., manufacturers of textile specialties, Providence, Rhode Island, state that they have discovered a process by which they can put a coating, which is invisible and cannot be detected by touch, over a rubber surface so as to make it proof against grease. They have not only given this matter a thorough testing, but they have already begun to supply rubber manufacturers with this preparation. It is, of course, of obvious value for aprons, and in the making of clothing that is to be used where there is any grease, as, for instance, in a dairy. The name of this preparation is "Boline." The company is now increasing its facilities and expects to be ready before long to make this new product in considerable quantities.

**COAL PRICES TO SOAR!**

Advices from Cleveland speak of an impending car shortage, likely to be the greatest in the history of transportation, as being liable to occur within a month. As a result, it is anticipated that the prices of both hard and soft coal will advance. Local distributors of anthracite are said to be fifty per cent. behind in their receipts, due to the closing of the mines last spring and the failure of the railroads to move the output.

**RUBBER FLOORS FOR STAGE DANCING.**

According to European advices, the slippery floors on which stage dances have hitherto been executed at Parisian music halls, are being replaced by rubber matting. Two rubber mats about 17 feet long by 7 feet wide are placed side by side in the center of the stage. The mats are about  $\frac{1}{8}$ -inch in thickness, a couple of them being said to cost about \$50 or \$60.

It has been suggested that sooner or later the whole stage will be covered with a rubber tiled flooring. That stage floors are at present too slippery is an admitted fact, the question arising: what is to be the consequence of prospective increased speed in terpsichorean evolutions?

**FOUR-INCH TRUCK TIRES.**

Foreigners, particularly the English, have been rather prone to criticize American truck tires on the ground that they were much too thin to give the best possible continuous service. American truck tires usually remain about  $2\frac{3}{4}$  inches in thickness irrespective of the width of the tire, while in England and on the continent the thickness of a tire—or the sectional height—is in proportion to the width; for instance, a tire  $3\frac{1}{2}$  inches wide will be  $2\frac{3}{4}$  inches thick, but a 6-inch tire will be 4-inch thickness. Undoubtedly this extra thickness gives greatly increased wear and also diminishes the jolting. On the other hand, of course, it takes much more rubber.

**ASBESTOS IN THE UNITED STATES AND CANADA.**

The total production in the United States for 1911, according to the United States geological survey, was valued at \$119,935; the raw material imported from Canada was valued at more than 11 times that amount. Canada's production of asbestos in 1911 was worth nearly \$3,000,000.

**MR. TAFT TO HAVE SOME RUBBER BOOTS.**

The Boston Rubber Shoe Co., at its factory in Malden, Massachusetts, is manufacturing a special pair of fishermen's hip boots, to be presented to President Taft when he visits that city during the carnival which is soon to be held in the Malden Anniversary Week. A great many of our statesmen have been said in the past to belong to the "gum-shoe brigade," but this is the first time that any man so distinguished in our political life has been openly decorated with a pair of rubber boots.

**MOTOR TRUCK TIRES IMPROVING.**

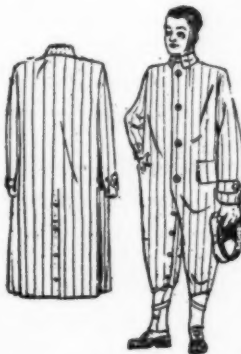
According to a prominent tire manufacturer, no period in the history of the motor truck industry has developed such marked improvements in solid tires as the past year. A proof of this statement may be found in the fact that within the year manufacturers have increased their mileage guarantees 2,000 and in some instances 4,000 miles. It now is possible for a truck owner to buy tires covered by a guarantee of 10,000 miles, irrespective of the city or locality in which they are to be used. Up to a short time ago manufacturers were compelled to discriminate against certain cities and localities because of local conditions, such as bad pavements, unimproved highways, the prevalence of hills and for other causes peculiar to a particular section. In such places guaranteed mileage was less than where better conditions prevailed.

Commenting on the solid tire situation at the present time, F. F. Phillips, of the United States Tire Co., says:

"Truck owners are not only receiving greater mileage guarantees today than ever before, but they are getting better all-around service. Our new demountable solid tire, which has been on the market about eight months, is sold under a flat guarantee of 10,000 miles, conditional only upon the service being had within one year's time. The locality where the tires are to run makes no difference in our case."

**SOME HIGHLY VALUABLE SUGGESTIONS.**

A correspondent in a recent number of "Motorcycling" contributes the following interesting economic suggestion. "If you have an old raincoat, mackintosh or like garment, split it down the back about the length of the regular vent, sew four or five buttons on strongly, and make button holes or clasps corresponding on each side of the front of the garment. When buttoned together, like illustration, it completely covers your good clothes." This suggestion is further elucidated by the accompanying cut, showing just how it is done.



But why stop with utilizing an old rubber garment in the method indicated? Why not complete the good work? An old football cover, with the lacing taken out and the slit extended possibly an inch or two, would make a clever motor cap, coming well down over the ears and fitting the head snugly. Two ten-inch sections cut out of an old automobile tire and turned up a little at the two ends would make a very fine pair of rubber shoes. Naturally the sides of these cut-open sections would clamp the

foot and hold on like a pair of "Eversticks." Furthermore, if an old hot water bottle were cut in two across the middle, and gathering strings inserted around the edges you would have a fine pair of rubber mittens. These could readily be converted into gloves by simply cutting the necessary holes for the thumb and fingers to project through.

It will be seen at once from the above suggestions that anyone with a little thought and ingenuity, a few buttons, a string or two, and possibly a nail, can make almost anything he wants in the way of a rubber outfit from discarded rubber relics and thus materially cut down the present high cost of living.

**THE UNITED STATES TIRE CO.'S ST. LOUIS OFFICE.**

The United States Tire Co. expects soon to move into a new building at Locust street and Compton avenue, St. Louis, Missouri, of which it is said to have taken a ten years' lease.



## Recent Patents Relating to Rubber.

### UNITED STATES OF AMERICA.

ISSUED AUGUST 6, 1912.

- N**O. 1,034,468. Tire for automobile wheels. H. Knoch, Aldershof, near Berlin, Germany.
- 1,034,475. Resilient vehicle wheel. M. Mathiesen, San Antonio, Texas.
- 1,034,497. Elastic suspension device for motor cars. F. Pagliano, Turin, Italy.
- 1,034,511. Automatic hose and tire connector. E. J. Rohrbacher, Portland, Ore.
- 1,034,524. Spring wheel. C. Sjogren, Wessington Springs, S. D.
- 1,034,720. Spring cushion tire. N. McQueen, Ludowici, Ga.
- 1,034,744. Shoe or boot. F. Tilt and J. E. Telling, Holland, Mich.
- 1,034,748. Pneumatic tire. E. Well, New Orleans, La.
- 1,034,763. Cushion innersole for shoes. F. O. Brown, St. Louis, Mo.
- 1,034,779. Device for holding reins, leashes, and the like. H. Franzky, Liegnitz, and J. Wiczorek, Haynau, Germany.
- 1,034,847. Vehicle wheel. P. I. Viel, Paris, France.
- 1,034,942. Resilient metal tire for vehicle wheels. F. W. Wieber, Colorado Springs, Col.
- 1,034,966. Tire. H. A. Brandenburger, St. Louis, Mo.
- 1,034,975. Resilient wheel. Z. D. Butts, Cleveland, Ohio.
- 1,034,980. Spring wheel. J. F. Cocowitch, Dunnellon, Fla.
- 1,035,004. Vehicle wheel. T. A. Hargraves and E. J. McCord, Belfast, Ireland.
- 1,035,052. Spring tire. C. P. Rosier, Boulder, Col.
- 1,035,058. Spring wheel for automobiles and other vehicles. W. Stephens, New Bedford, Mass., and H. M. Gaston, Newport, R. I.
- 1,035,078. Resilient tire for vehicle wheels. W. W. Broga, Springfield, Mass.
- 1,035,107. Elastic material. W. J. Teufel, Stuttgart, Germany.
- 1,035,128. Cushion tire for wheels. N. McQueen, Ludowici, Ga.

#### Reissue.

- 13,454. Supporting and retaining device for spare tires. W. A. Allen, New York.

ISSUED AUGUST 13, 1912.

- 1,035,138. Vehicle tire. F. N. Ashley, New York.
- 1,035,207. J. K. Libby, Malden, Mass.
- 1,035,217. Face protector. O. H. McQuary, Jr., Lawrence, Kan.
- 1,035,283. Self-inflating and non-collapsible pneumatic tire. F. F. Wear, San Francisco, Cal.
- 1,035,367. Resilient wheel. A. Look, Hayfield, Iowa.
- 1,035,371. Cushion heel. C. H. C. Martin, Forestville, N. Y.
- 1,035,473. Tire. A. C. Rovelli, Philadelphia, Pa.
- 1,035,487. Vehicle tire. G. E. Starn, assignor to Starn Tire Mfg. Co., Camden, N. J.
- 1,035,560. Method of refilling aerial vehicles during a flight. H. Erdmann, Charlottenburg, Germany.
- 1,035,586. Grip tread for elastic tires. C. L. Hoff, York, Pa.
- 1,035,749. Apparatus for making tires. J. N. Satterthwaite, assignor to Empire Tire Co.—both of Trenton, N. J.
- 1,035,788. Synthetic caoutchouc. A. Heinemann, South Kensington, London, England.
- 1,035,804. Air compressor. M. Mintz, Rock Island, Ill.

#### Trade Marks.

- 64,275. Parker, Stearns & Co., New York. The word *Boudoir*. For rubber bathing cape.
- 64,406. Hood Rubber Co., Boston, Mass. The word *Tuxedo*. For rubber boots, shoes, etc.
- 64,409. International Shoe Co., St. Louis, Mo. The words *Golden West*. For rubber boots and shoes.

ISSUED AUGUST 20, 1912.

- 1,035,851. Elastic tire for the wheels of vehicles. F. E. Blaisdell, Hamersmith, England.
- 1,035,859. Metallic packing. P. Conniff, Washington, D. C.
- 1,035,867. Wire winding machine. A. L. Eastham, Beaumont, Tex., assignor to J. A. Wiggs, Chattanooga, Tenn.
- 1,035,870. Vehicle tire. J. G. Funk, Swissvaleborough, Pa.
- 1,035,912. Wheel. M. C. Rose, Cleveland, Ohio.
- 1,036,016. Tire. E. Siegel and J. Ruppert, Jr., New York.
- 1,036,020. Tire holder. A. M. Sonnichsen, assignor to Auto Parts Mfg. Co.—both of Milwaukee, Wis.
- 1,036,065. Vehicle tire. C. W. Blaney, Philadelphia, Pa.
- 1,036,120. Hose supporting device. W. Humbaugh, Dayton, Ohio.
- 1,036,188. Resilient antifriction hub for vehicle wheels. C. G. Capwell, Rosindale, Mass.
- 1,036,251. Pneumatic rubber tire protector. J. F. Johnson, Jamestown, N. Y.
- 1,036,311. Wire cutting machine. F. H. Nullmeyer and C. A. Porath, Struthers, Ohio, assignors to The Youngstown Sheet & Tube Co., Youngstown, Ohio.
- 1,036,340. Cushioning device. A. F. Rockwell and C. F. Schmelz, assignors to The New Departure Mfg. Co.—both of Bristol, Conn.

- 1,036,349. Hose coupling. C. C. Schultz, Victor, Iowa.
- 1,036,428. Coated metal wire rubber fabric. R. M. Bissell, Valcour, N. Y.
- 1,036,448. Device for testing piston rings. D. J. Campbell, Muskegon, Mich.
- 1,036,455. Pneumatic tire. J. H. Clune, Springfield, Mass.
- 1,036,493. Pneumatic tire. B. B. Hill, London, England.
- 1,036,516. Rubber tire. J. J. Beitler, New York, assignor to H. C. Beitler, Chicago, Ill.

ISSUED AUGUST 27, 1912.

- 1,036,532. Shelter for dirigible balloons, airships and the like. R. A. Katz, Berlin, Germany.
- 1,036,533. Vehicle wheel. W. C. Allen, Kansas City, Mo.
- 1,036,576. Attaching rubber to metals. L. Daft, Rutherford, N. J., assignor to Electro-Chemical Rubber & Mfg. Co. of New Jersey.
- 1,036,579. Resilient wheel. W. W. Darling, Delta, Col.
- 1,036,595. Suspender garter for stockings. H. Fenton, Glebe Point, near Sydney, New South Wales, Australia.
- 1,036,599. Vehicle wheel. A. H. Flournoy, Heraldsburg, Cal.
- 1,036,602. Signal for pneumatic tires. F. L. Fuller, Sacramento, Cal.
- 1,036,685. Vehicle wheel. R. D. Muro, Habana, Cuba.
- 1,036,748. Tire removing device. W. L. Tobey, Winthrop, Mass.
- 1,036,776. Tire armor. H. Auperl, New York.
- 1,036,829. Cushion tired wheel. N. Gratz, Boise, Idaho.
- 1,036,855. Pneumatic vehicle wheel. G. Kanter, Murtoa, Victoria, Australia.
- 1,036,856. Pneumatic shock absorber for vehicles. G. Kanter, Murtoa, Victoria, Australia.
- 1,036,955. Tire. G. V. Benninghoff, Meadville, Pa.
- 1,037,116. Tread for tires. J. A. Bowden, Los Angeles, Cal.
- 1,037,144. Vehicle wheel. T. J. Holland, Antigo, Wis.
- 1,037,158. Process of manufacturing substitutes for oils, caoutchouc, resins and the like. L. Lilienfeld, Vienna, Austria-Hungary.

#### Trade Mark.

- 52,874. Hood Rubber Co., Boston, Mass. The word *Winner*. For rubber boots, shoes, etc.

### GREAT BRITAIN AND IRELAND.

#### PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1910.

\*Denotes Patents for American Inventions.

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 8, 1912.]
- 9,264. Rubber substitutes. J. Stockhausen, 105 Fischelnerstrasse, Crefeld, Germany.
- 9,281. Tire attachments to rims. J. W. Hall, 70 Josephine avenue, Brixton Hill, and C. Baynes, 9 Kensington Court Mansions—both in London.
- 9,290. Wheel tires. T. H. B. Gayner, 113 Neville street, Middle Park, South Melbourne, Australia.
- 9,321. Moulding tires. Margetta International Sectional Tire Co., 56 Moorgate street, and A. J. M. Smith, Vanner Villa, Vanner Road, Sydenham—both in London.
- 9,364. Fluid pressure relays for amplifying sounds. Soc. des Etablissements, Gaumont, 57, Rue St. Roche, Paris.
- 9,427. Vehicle wheels. F. H. de Lostalot, 3 Avenue des Moulineaux, Billancourt, Seine, France.
- 9,434. Vehicle wheels. H. Farjas, 13 Rue Vignon, Paris.
- 9,497. Copying documents, etc. B. J. Hall, 41 Castelnau, Barnes, London.
- 9,523. Electric conductors. C. J. Beaver, Rangemoor Crescent Road, Hale, and E. A. Claremont, Broom Cottage, High Leigh—both in Cheshire.
- 9,534. Sponge substitutes. B. W. Wittenberg, 31 Weidendamm, Riga, Russia.
- 9,535. Sphygmometers. A. A. Thornton, 38 Chancery Lane, London.
- 9,546. Wheel tires. C. Schmidt, Ichenhausen, Bavaria.
- 9,580. Vehicle wheels. Austin Motor Co., and H. Austin, Longbridge Works, Northfield, near Birmingham.
- 9,600. India rubber washing machines, etc. R. Bridge, Castleton Iron-works, Castleton, Lancashire.
- 9,635. Railway vehicles. A. Spencer, 77 Cannon street, London.
- 9,722. Dioléfines; caoutchouc. W. H. Perkin and C. Weizmann, University Manchester, and F. E. Matthews and E. H. Strange, 7 Maple Inn, London.
- 9,734. Chair feet. H. Cohrs, 73 Steinstrasse, Dusseldorf, Germany.
- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 14, 1912.]
- 9,778. Discharging bottles, etc. R. G. Slec, Downhurst, Atkins Road, Clapham Park, London.
- 9,833. Boot machinery. F. H. and H. S. Pochin, of Standard Engineering Co., Evington Valley Road, Leicester.
- 9,855. Baths. A. C. Franklin, 24 Chatham Place, and G. W. Beall, 51 Gardner street—both in Brighton.
- 9,888. Signals. J. Buck and H. Them, Dinglingen, Baden, Germany.
- 9,923. Filling tires. R. Zimpel, 25 Verlangerte Wilhelmstrasse, Grosslichterfelde, Berlin.

9,962. Railway buffers. J. G. Robinson, Boothdale, Fairfield, near Manchester.

\*10,023. Tire valves. F. B. Carlisle, 35 High street, Malden, Mass., U. S. A.

10,064. Rubber strips for carpets, floor rugs, mats, etc. C. E. Player, Birkenhead, Auckland, New Zealand.

10,126. Wheel tires. A. Boerner, 45 Rue Henri Maus, Brussels.

10,128. Electric conductors. Scandinavian Belting and T. E. Delmaine, 59 Southwark street, London.

10,155. Vehicle wheels. H. A. Pryor, 70 Chancery Lane, London.

10,216. Treating india rubber. Hiestrich (Nachfolger), W., 4, Jungfernstieg, Hamburg, Germany.

10,277. Boots, etc. O. Budt, 1 Burgstrasse, Wernigerode, Germany.

10,232. Rubber sheets in leather manufacture. A. G. Bloxam, Birkbeck Bank Chambers, London.

10,239. Date indicators. J. F. Coates, 52 King William street, and A. Emmett, 96 Nightingale Lane, Wandsworth Common—both in London.

10,257. Wheel tires. G. W. Mascord, 5 The Crescent, Barnes, London.

10,292. Rubber tapping knives. D. D. Wragg, 70 Charles street, Sheffield.

10,321. Billiard cues. E. and F. Rudolph, 12 Freiburgerstrasse, Waldenburg, Germany.

10,326. Wheel tires. A. Boerner, 45 Rue Henri Maus, Brussels.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 21, 1912.]

10,370. Lubricators. J. T. K. Maddrell, 5 De Beers Road, Kimberley, South Africa.

10,420. Rubber substitutes. R. Desouches, 20 Rue Alphonse de Neuville; A. Riasse, 46 Cité des Fleurs, and A. Duron, 63 Rue Dulong—all in Paris.

10,438. Wheel tires. E. Overy, 40 Haig Road, Plaistow, and W. F. Gould, 213 Neville Road, Forest Gate—both in London.

10,439. Heel protectors. B. Fuchs, 27 Akacafutca, Budapest.

10,451. Wheel tires. A. de Donquers, and J. de Koninck, Anderlecht, near Brussels.

10,452. Wheel tires. A. de Donquers, Anderlecht, near Brussels.

10,473. Rubber cushions in axles of cycles. J. Roberts, 78 Granby street, Liverpool.

10,481. Moulding india rubber. W. H. Haydock, 2 Fitzwarren street, Pendleton, Manchester.

10,574. Weavers' shuttle threaders. A. MacLean, 49 Deansgate, Manchester.

10,612. Pressure gauges for tires. H. Edmunds, Parliament Mansions, Victoria street, Westminster.

10,619. Belts and bands. E. Lycett, Bromley street, Birmingham.

\*10,622. Wheel tires, etc. E. G. Dreger and F. E. Pfister, 19 Tehama street, San Francisco, Cal., U. S. A.

10,646. Bottle stoppers. Johnson & Sons, 23 Cross street, Finsbury, London, and E. A. Marr, 81 Stretton Road, East Croydon, Surrey.

\*10,672. Vehicle wheels. M. Clark, 401 Steinway Hall, Chicago, Ill., U. S. A.

10,698. A box for bottles. G. Leigh, Warren street, Stockport, Cheshire.

10,720. Vehicle wheels. J. N. Mollett, 6 Eastcheap, and T. P. Thomson, 434 Strand—both in London.

10,722. Vehicle wheels. E. Sutcliffe, 19 Bradford Road, Brighouse, Yorkshire.

10,726. Vehicle wheels. C. R. Strange, Merilbah, Clan Alpine street, Mosman, New South Wales, Australia.

10,732. Vehicle wheels. H. W. Spence, 56 Millicent avenue, Toronto, Canada.

10,808. Vehicle wheels. H. W. Toengers, Marie House, Brockley View, Forest Hill, London.

10,816. Electric meters. Chamberlain & Hookman and S. James, Solar Works, New Bartholomew street, Birmingham.

10,826. Diolefines; caoutchouc. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

\*10,827. Electric coils. J. L. Milton, Hotel Moicher, Tiffin, Ohio, U. S. A.

10,896. Buoys. D. Pesci, 4 Piazza Mazzini, Pisa, Italy.

10,914. Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 28, 1912.]

10,940. Compressing air, etc. G. Kubler, Brandon, Freta Road, Brixley Heath, and G. S. Woolliatt, "Weathersfield," Brixley Road, Erith—both in Kent, and Frazer & Chalmers, 3 London Wall Buildings, London.

10,942. Extracting rubber, etc. A. J. Boulton, 111 Hatton Garden, London.

11,060. Wheel tires. H. H. Cuthbert, 7 Belgrave Mansions, Grosvenor Gardens, and A. Tomlins, 130 Warwick street, Eccleston Square—both in London.

11,093. Pliers for manipulating elastic tires. J. Platt, Totley Rise, Bushey Wood, Dore, near Sheffield.

11,101. Smoking india rubber. A. Woosnam, 46 Lincoln's Inn Fields, London.

11,177. Medical syringe. F. J. Hering, Basel-Binningen, Switzerland.

\*11,212. Artificial teeth. J. Petry, 2022 Lowrie street, Pittsburgh, Pa., U. S. A.

11,247. Skates. A. J. Mollinger, 42 van Nispenstaat, Nymegen, Holland.

11,301. Corsets. W. Pretty & Sons and L. E. Pretty, Tower Ramparts, Ipswich.

11,329. Cords. R. Latour and A. Cappelle, 157 Chaussee d' Ypres, Menin, Belgium.

11,449. Wheel tires. R. Withy, 103 Verney Road, North Camberwell, London.

11,482. Reclaimed rubber. H. L. Terry, 23 Hopwood avenue, Market Place, and G. Spencer, Dudley Bank, Withington Road—both in Manchester, and E. L. Curbishley, Woodlea, Albert Road, Cheadle Hulme, near Manchester.

## THE FRENCH REPUBLIC.

### PATENTS ISSUED (with Dates of Application).

- 439,519 (January 30, 1912). J. G. Peck. Elastic wheel.
- 439,564 (January 31). Pugniet & Co. Manufacture of rubber articles by stamping.
- 439,570 (January 31). R. Reinecke and E. Knoll. Process for production of a substitute for ebonite.
- 439,579 (January 31). G. G. Le Meneust. Vehicle wheel with elastic tire.
- 439,606 (January 29). Dupont & Ameripouque. Metallic elastic dismountable wheel, with special axle, applicable to all kinds of automobiles.
- 439,651 (April 13, 1911). H. Morin. Insulating product and process for its manufacture.
- 439,662 (February 2, 1912). P. Beer. Boiler press for the vulcanization of rubber.
- 439,715 (February 5). Bolat, Geiss & Richter. Elastic wheel tire, specially for automobiles.
- 439,766 (January 6). F. M. Henry. Combined sectional tire and wheel rim.
- 439,796 (February 2). A. Vertua. Pneumatic vehicle wheel.
- 439,797 (February 3). A. Mascart. Elastic vehicle tire.
- 439,805 (February 6). A. Bienessez. Anti-skid device for elastic tires.
- 439,841 (February 7). P. Rousset. Device for mounting and dismounting pneumatic tires.
- 439,956 (February 10). E. J. Andriess. Improvements in air chambers for automobiles and other vehicles.
- 440,018 (February 8). V. Bernard. Articulated protector for pneumatic tires.
- 440,045 (February 12). H. A. Pryer. Improvements in vehicle wheels.
- 440,046 (February 12). A. Olier & Co. Manufacture of metallic armatures for solid rubber tires.
- 440,052 (February 12). J. L. Didier, Paris. Elastic protective tire.
- 440,055 (February 12). A. Margette. Improvements in sectional covers for tires.
- 440,082 (February 1). A. von Brüning. System of durable and resisting tires for all kinds of wheels.
- 440,119 (February 13). F. Steigenberger. Improvements in anti-skid devices for automobiles.
- 440,169 (February 14). J. Borde. Pneumatic tire with rigid tread.
- 440,271 (February 17). O. T. Banks. Improvements in sectional pneumatic tires.
- 440,173 (February 14). Badische Anilin und Soda Fabrik. Production of substances resembling rubber.

## THE GERMAN EMPIRE.

### PATENTS ISSUED (with Dates of Validity).

- 250,181 (June 20, 1911). Impregnation of fabrics, etc. Th. Budde, Charlottenburg, Berlin.
- 259,282 (July 29, 1911). Air tight bottle stoppers. Josef Metz, Wien.
- 250,350 (November 27, 1910). Prevention of shrinking in elastic fabrics. W. J. Teufel, Stuttgart.
- 250,537 (June 25, 1911). Method of replacing damaged tires. Deutsche Dunlop Gummi-Kompagnie a. G. Hanau.

## THE KINGDOM OF BELGIUM.

### PATENTS PUBLISHED.

- 245,158 (1912). H. Villain, 20 Rue Coulincourt, Paris. Apparatus for softening gutta percha.
- 244,965 (1912). J. Ostromislensky. Manufacture of substances resembling rubber.
- 245,039 (1912). H. Graf, Brühl, near Cologne. Seamless assembling of rubber, without screws or other metallic appliances.
- 246,017 (1912). F. Pfeumer, Dresden. Hot vulcanization of rubber, gutta percha and balata.
- 246,245 (1912). S. Blok & Benina, Amsterdam. Filling substance for rubber and process of manufacture.

## EXPORTS FROM THE UNITED STATES.

### SHIPMENTS TO NON-CONTIGUOUS COUNTRIES.

For the Fiscal Year ended June 30, 1912:

| TERRITORIES.      | Belting,<br>Packing<br>and Hose. | Boots<br>and<br>Shoes. | Tires.*   | All<br>Other<br>Rubber. | TOTAL       |
|-------------------|----------------------------------|------------------------|-----------|-------------------------|-------------|
| Alaska .....      | \$86,634                         | \$181,505              | \$1,577   | \$21,890                | \$291,606   |
| Hawaii .....      | 67,550                           | 9,699                  | 255,025   | 67,278                  | 399,552     |
| Porto Rico .....  | 19,485                           | 1,198                  | 228,135   | 93,226                  | 342,044     |
| Philippines ..... | 93,545                           | 6,734                  | 177,251   | 125,782                 | 403,312     |
| Total, 1911-12... | \$267,214                        | \$199,136              | \$661,988 | \$308,176               | \$1,436,514 |
| Total, 1910-11... | 239,651                          | 181,378                | 507,741   | 287,484                 | 1,216,352   |
| Total, 1909-10... | 176,070                          | 222,037                | .....     | 392,114                 | 790,221     |
| Total, 1908-09... | 190,908                          | 194,976                | .....     | 264,722                 | 650,606     |
| Total, 1907-08... | 162,602                          | 235,044                | .....     | 217,801                 | 615,447     |

\* Included in "All Other Rubber" prior to July 1, 1910.

## Review of the Crude Rubber Market.

THE principal feature of the London market during September has been the loss of the advance established the previous month, in conjunction with a further drop in values. Comparing recent quotations of fine Pará, it will be found that the following prices have ruled: June 28, 4s. 7½d.; July 26, 4s. 11¾d.; August 31, 5s. 1¾d. From the last named point, the market has steadily fallen off; the price reaching: September 4, 5s.; September 10, 4s. 10d.; September 11, 4s. 9d., and September 17 (at time of writing) 4s. 7½d. Thus the price is again where it was on June 28.

As to plantation rubber, the market has followed more or less the same course; pale crepe closing August 31 at 4s. 10¼d.; September 6, 4s. 9d.; September 10, 4s. 8d.; September 16, 4s. 7¼d.; and September 17 (at time of writing) 4s. 6½d.

The comparative movements of Pará and plantation rubber during August and September are of interest:

|                    | Fine Pará. | Pale Crepe. |
|--------------------|------------|-------------|
| August 1 .....     | 4s. 10½d.  | 4s. 10½d.   |
| August 31 .....    | 5s. 1¾d.   | 4s. 10¼d.   |
| September 4 .....  | 5s.        | 4s. 9½d.    |
| September 10 ..... | 4s. 10d.   | 4s. 8d.     |
| September 11 ..... | 4s. 9d.    | 4s. 7½d.    |
| September 17 ..... | 4s. 7½d.   | 4s. 6½d.    |

Thus plantation rubber has withstood the downward movement better than Pará has done, but it should be remembered that it did not share to the same extent as Pará in the upward course of the market during August.

Among the reasons to which the fall in quotations of plantation rubber is attributed, has been the anticipation that the quantities announced for auction would depress prices. Mail reports of the sale of August 27 of 875 tons indicate, however, that the opening was at practically unchanged prices maintained throughout the sale, which closed with steady values. Demand was remarkably well sustained; most of the buying interests having to go short.

The sale of September 10, for which nearly 1,000 tons had been expected passed off relatively well. At the opening demand was light and prices easy, though without material change. These rates were maintained throughout the sale, with moderate inquiry.

The New York market has partaken of the same general features as have characterized development in London.

At the Antwerp sales of August 28 a very satisfactory result was attained, due to a good demand from America and the Continent. Of the 360 tons Congo catalogued, 285 tons were cleared at an average advance representing 1¾d. per pound over valuations. Out of 100 tons plantation, 90 tons were sold at a decline equalling 1¾d. per pound.

Sales were fixed to take place at Rotterdam on September 11 of 37 tons, and at Amsterdam on September 20 of 65 tons.

The Havre sale of August 28 resulted in 66 tons being sold out of the 100 tons Congo offered. Prices obtained were satisfactory, being about 2 per cent. above valuations.

According to latest advices, the London market has assumed a firmer aspect; fine Para having been quoted on 18th at 4s. 8d., and on 19th, at 4s. 8½d. Pale crepe has recovered by 19th to 4s. 7d.

[Owing to this issue, though dated October 1, being published on September 23, in time for the Exposition, the various market reports are to a proportionately earlier date.]

### NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, September 20—the current date:

| PARA.                        | Oct. 1, '11. | Sept. 1, '12. | Sept. 20, '12. |
|------------------------------|--------------|---------------|----------------|
| Islands, fine, new.....      | 107@108      | 112@113       | 109@110        |
| Islands, fine, old.....      | 109@110      | .....         | 111@112        |
| Upriver, fine, new.....      | 113@114      | 122@123       | 114@115        |
| Upriver, fine, old.....      | 115@116      | 124@125       | 121@122        |
| Islands, coarse, new.....    | 61@ 62       | 58@ 59        | 56@ 57         |
| Islands, coarse, old.....    | .....        | .....         | .....          |
| Upriver, coarse, new.....    | 96@ 97       | 96@ 97        | 89@ 90         |
| Upriver, coarse, old.....    | .....        | .....         | 91@ 92         |
| Cametá .....                 | 66@ 67       | 67@ 68        | 63@ 64         |
| Caucho (Peruvian) ball.....  | 98@ 99       | 92@ 93        | 87@ 88         |
| Caucho (Peruvian) sheet..... | .....        | 80@ 81        | .....          |

### PLANTATION PARA.

|                               |         |         |         |
|-------------------------------|---------|---------|---------|
| Fine smoked sheet.....        | 135@136 | 121@122 | 114@115 |
| Fine pale crepe.....          | 133@134 | 120@121 | 114@115 |
| Fine sheets and biscuits..... | 128@129 | 117@118 | 111@112 |

### CENTRALS.

|                                |        |        |        |
|--------------------------------|--------|--------|--------|
| Esmeralda, sausage .....       | 87@ 88 | 85@ 86 | 83@ 84 |
| Guayaquil, strip .....         | .....  | .....  | .....  |
| Nicaragua, scrap .....         | 86@ 87 | 84@ 85 | 82@ 83 |
| Panama .....                   | .....  | .....  | .....  |
| Mexican plantation, sheet..... | .....  | 93@ 94 | .....  |
| Mexican, scrap .....           | 86@ 87 | 84@ 85 | 80@ 81 |
| Mexican, slab .....            | .....  | .....  | .....  |
| Mangabeira, sheet .....        | .....  | .....  | .....  |
| Guayule .....                  | 46@ .. | 57@ 58 | 58@ 59 |
| Balata, sheet .....            | 83@ 84 | 88@ 89 | 85@ 86 |
| Balata, block .....            | 58@ 59 | 60@ 61 | 56@ 57 |

### AFRICAN.

|                                |         |         |         |
|--------------------------------|---------|---------|---------|
| Lopori, ball, prime.....       | 111@112 | .....   | 109@110 |
| Lopori, strip, prime.....      | .....   | .....   | .....   |
| Aruwimi .....                  | 101@102 | 104@105 | 104@105 |
| Upper Congo, ball, red.....    | 110@111 | 107@108 | 105@106 |
| Ikelemba .....                 | .....   | .....   | .....   |
| Sierra Leone, 1st quality..... | 95@ 96  | 100@101 | 96@ 97  |
| Massai, red .....              | 96@ 97  | 102@103 | 97@ 98  |
| Soudan, Niggers .....          | .....   | .....   | .....   |
| Cameroon, ball .....           | 70@ 71  | .....   | 70@ 71  |
| Benguela .....                 | 70@ ..  | .....   | .....   |
| Madagascar, pinky .....        | 85@ 86  | .....   | .....   |
| Accra, flake .....             | 27@ 28  | 26@ 27  | 27@ 28  |

### EAST INDIAN.

|                 |       |       |       |
|-----------------|-------|-------|-------|
| Assam .....     | ..... | ..... | ..... |
| Pontianak ..... | 6@ .. | 6¼@6½ | 6½@6¾ |
| Borneo .....    | ..... | ..... | ..... |

### Late Pará cables quote:

|                       | Per Kilo. |                       | Per Kilo. |
|-----------------------|-----------|-----------------------|-----------|
| Islands, fine .....   | 4\$600    | Upriver, fine .....   | .....     |
| Islands, coarse ..... | 2\$200    | Upriver, coarse ..... | .....     |
|                       |           | Exchange .....        | 16¼d.     |

### Latest Manáos advices:

|                       |        |                |          |
|-----------------------|--------|----------------|----------|
| Upriver, fine .....   | 5\$825 | Exchange ..... | 167/32d. |
| Upriver, coarse ..... | 3\$825 |                |          |

### New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "A decided change has come over the money market since our report for August, rates having stiffened considerably and the demand for paper fallen off. New York banks have been mostly out of the market during September, but there has been a fair demand from out of town, the best rubber names ruling at 5½@5¾ per cent., and those not so well known 6@6½ per cent."

### NEW YORK PRICES FOR AUGUST (NEW RUBBER).

|                       | 1912.       | 1911.       | 1910.       |
|-----------------------|-------------|-------------|-------------|
| Upriver, fine .....   | \$1.16@1.23 | \$1.09@1.17 | \$1.87@2.20 |
| Upriver, coarse ..... | .89@ .96    | .95@ .99    | 1.40@1.48   |
| Islands, fine .....   | 1.06@1.13   | 1.02@1.09   | 1.78@2.10   |
| Islands, coarse ..... | .56@ .59    | .61@ .63    | .94@ .98    |
| Cametá .....          | .64@ .68    | .66@ .68    | .96@1.10    |



**Statistics of Para Rubber (Excluding Caucho).**

|                          | NEW YORK.        |         |       | Total, 1912. | Total, 1911. | Total, 1910. |
|--------------------------|------------------|---------|-------|--------------|--------------|--------------|
|                          | Fine and Medium. | Coarse. |       |              |              |              |
| Stocks, July 31.....     | 78               | 29 =    | 107   | 385          | 209          |              |
| Arrivals, August .....   | 850              | 436 =   | 1,286 | 1,246        | 702          |              |
| Aggregating .....        | 928              | 465 =   | 1,393 | 1,631        | 911          |              |
| Deliveries, August ..... | 769              | 441 =   | 1,210 | 1,261        | 740          |              |
| Stocks, August 31 .....  | 159              | 24 =    | 183   | 370          | 171          |              |

|  | Pará. |       |       | England. |        |        |
|--|-------|-------|-------|----------|--------|--------|
|  | 1912. | 1911. | 1910  | 1912.    | 1911.  | 1910.  |
| Stocks, July 31.....                         | 2,300 | 3,450 | 485   | 650      | 1,400  | 1,140  |
| Arrivals, August .....                       | 1,465 | 1,295 | 1,460 | 639      | 465    | 348    |
| Aggregating .....                            | 3,765 | 4,745 | 1,945 | 1,289    | 1,865  | 1,488  |
| Deliveries, August .....                     | 2,410 | 1,735 | 1,360 | 894      | 555    | 213    |
| Stocks, August 31...                         | 1,355 | 3,010 | 585   | 395      | 1,310  | 1,275  |
| World's visible supply, August 31.....       | 2,910 | 5,281 | 2,473 | 1,912.   | 1,911. | 1,910. |
| Pará receipts July 1 to August 31.....       | 2,785 | 2,445 | 2,960 |          |        |        |
| Pará receipts of caucho, same dates.....     | 730   | 710   | 1,210 |          |        |        |
| Afloat from Pará to United States, August 31 | 497   | 231   | 229   |          |        |        |
| Afloat from Pará to Europe, August 31.....   | 480   | 360   | 215   |          |        |        |

**Rubber Stock at Pará.**

Stock for January 31 showed an increase caused by heavier arrivals, while that of February 29 shows a slight decrease. The stock of March 31 displayed a further reduction, while that of April 30 was about the same as a month earlier. On May 31 the stock had again increased, but had receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August.

|                        |       |                       |       |
|------------------------|-------|-----------------------|-------|
| February 28, 1911..... | 3,787 | December 31 .....     | 2,675 |
| March 31 .....         | 4,214 | January 31, 1912..... | 3,370 |
| April 30 .....         | 5,104 | February 29 .....     | 3,240 |
| May 31 .....           | 5,350 | March 31 .....        | 2,730 |
| June 30 .....          | 4,545 | April 30 .....        | 2,770 |
| July 31 .....          | 3,884 | May 31 .....          | 2,995 |
| August 31 .....        | 3,450 | June 30 .....         | 2,685 |
| September 30 .....     | 3,102 | July 31 .....         | 2,300 |
| October 31 .....       | 3,320 | August 31 .....       | 1,355 |
| November 30, 1911..... | 3,050 |                       |       |

**Liverpool.**

WILLIAM WRIGHT & Co., report [September 21]:

*Fine Pará.*—The market has continued firm; there has been a good demand for spot rubber, principally old condition; a good business done at higher prices, which advanced 3d. per lb. For forward delivery the near positions have been in good request at advancing rates; up to 4s. 10d. [\$1.18] paid for October-November. Receipts for the new crop July-August are 800 tons in excess of last year, doubtless owing to increased transport facilities. Coupled with the active demand for Plantation, there seems little chance of any decided break in values for the present. Closing value—Upriver fine, spot, 5s. 1½d. [\$1.27]; September, 5s. 1d. [\$1.24]; September-October, 4s. 11½d. [\$1.21]; Islands fine, 4s. 10½d. [\$1.19].

**WEEKLY MOVEMENT OF LONDON PRICES.**  
[IN SHILLINGS AND PENCE PER POUND.]

|                      |       |                    |       |
|----------------------|-------|--------------------|-------|
| January 5, 1912..... | 4/4½  | May 17, 1912 ..... | 4/7½  |
| January 12 .....     | 4/5½  | May 24 .....       | 4/7½  |
| January 19 .....     | 4/5½  | May 31 .....       | 4/7½  |
| January 26 .....     | 4/8   | June 7 .....       | 4/8½  |
| February 2 .....     | 4/7   | June 14 .....      | 4/10  |
| February 9 .....     | 4/6½  | June 21 .....      | 4/9½  |
| February 16 .....    | 4/6¾  | June 28 .....      | 4/7½  |
| February 23 .....    | 4/7½  | July 5 .....       | 4/9   |
| March 1 .....        | 4/7½  | July 12 .....      | 4/10  |
| March 8 .....        | 4/9   | July 19 .....      | 4/10  |
| March 15 .....       | 4/10½ | July 26 .....      | 4/11¾ |
| March 22 .....       | 5/1½  | August 2 .....     | 4/11  |
| March 29 .....       | 4/11½ | August 9 .....     | 5/0½  |
| April 5 .....        | 4/11  | August 16 .....    | 5/0½  |
| April 12 .....       | 4/11  | August 23 .....    | 5/2   |
| April 19 .....       | 4/10¾ | August 30 .....    | 5/1¾  |
| April 25 .....       | 4/9   | September 7 .....  | 4/11¾ |
| May 3 .....          | 4/7½  | September 14 ..... | 4/9¾  |
| May 10 .....         | 4/7½  |                    |       |

**Rotterdam.**

HAVELAAR & DE VRIES report [August 27]:

The date of the next sales has been fixed for September 11. The quantity offered amounts to about 37 tons, as follows: Congo, 22 tons; Hevea, 5 tons; Ficus, 9 tons; Vanar, 1 ton.

**Amsterdam.**

JOOSTEN & JANSSEN report [September 6]:

Our next sale by tender will be held on September 20, and comprises about 65 tons: Hevea, 34 tons; Ficus, 8 tons; Castillosa, 3 tons.

**Plantation Rubber from the Far East.****EXPORTS OF CEYLON-GROWN RUBBER.**

[From January 1 to July 1, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

|                            | 1911.     | 1912.     |
|----------------------------|-----------|-----------|
| To Great Britain .....     | 1,604,340 | 3,784,098 |
| To United States .....     | 1,079,402 | 1,985,752 |
| To Belgium .....           | 313,258   | 659,495   |
| To Australia .....         | 24,374    | 112,899   |
| To Germany .....           | 12,394    | 96,942    |
| To Austria .....           | 255       | 20,474    |
| To Japan .....             | 33,985    | 18,509    |
| To Canada .....            | 9,971     | 16,065    |
| To Italy .....             | 3,597     | 5,885     |
| To Holland .....           | 100       | 2,282     |
| To France .....            | 117       | 1,915     |
| To India .....             | 85        | 100       |
| To Norway and Sweden ..... |           | 39        |

Total ..... 3,081,878 6,704,455

[Same period 1910—1,468,146 pounds; same 1909—693,947.]

**TOTAL EXPORTS FROM MALAYA.**

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

| To—                   | Port Swet-<br>tenham. |                  |                     | Total.     |
|-----------------------|-----------------------|------------------|---------------------|------------|
|                       | Singapore, July 18.   | Penang, June 30. | Corrected, June 30. |            |
| Great Britain.....    | 4,876,249             | 3,845,608        | 7,847,520           | 16,569,377 |
| Continent .....       | 135,090               | 27,867           | 1,048,061           | 1,211,018  |
| Japan .....           | 243,204               |                  |                     | 243,204    |
| Australia .....       | 35,615                |                  |                     | 35,615     |
| Ceylon .....          | 2,217                 | 123,493          | 448,559             | 574,269    |
| United States.....    | 1,186,413             |                  |                     | 1,186,413  |
| Total .....           | 6,478,788             | 3,996,968        | 9,344,140           | 19,819,896 |
| Same period, 1911.... | 2,978,129             | 2,266,216        | 5,994,795           | 11,239,140 |
| Same period, 1910.... | 1,676,580             | 1,096,074        | 4,069,587           | 6,842,241  |
| Same Period, 1909.... | 1,418,962             | 1,470,960        |                     | 2,889,922  |

**Rubber Scrap Prices.**

LATE NEW YORK QUOTATIONS.— Prices paid by consumers for carload lots, per pound—are practically unchanged.

|  | September 20. |
|--|---------------|
| Old rubber boots and shoes—domestic.....   | 9¼@ 9¾        |
| Old rubber boots and shoes—foreign.....    | 9½@ 9¾        |
| Pneumatic bicycle tires.....               | 4½@ 4¾        |
| Automobile tires .....                     | 9¼@ 9¾        |
| Solid rubber wagon and carriage tires..... | 9¼@ 9½        |
| White trimmed rubber .....                 | 11 @ 11½      |
| Heavy black rubber .....                   | 4¾@ 5         |
| Air brake hose .....                       | 5½@ 5¾        |
| Garden hose .....                          | 1¾@ 1½        |
| Fire and large hose.....                   | 2 @ 2½        |
| Matting .....                              | ¾@ ¾          |

## IMPORTS INTO THE UNITED STATES OF UNMANUFACTURED INDIA-RUBBER, ETC.

| Years.       | [Fiscal years ending June 30.]<br>India Rubber. | Guayule Gum. | Balata.   | Gutta Jelutong. | Gutta Percha. | <sup>1</sup> Scrap. | Total.        |
|--------------|---|--------------|-----------|-----------------|---------------|---------------------|---------------|
| 1911-12..... | \$93,013,255                                    | \$6,463,787  | \$984,012 | \$2,255,050     | \$225,797     | \$2,095,605         | \$105,037,506 |
| 1910-11..... | 76,244,603                                      | \$10,443,157 | 624,702   | 2,872,633       | 390,548       | 2,334,870           | 92,910,513    |
| 1909-10..... | 101,078,825                                     | .....        | 196,878   | 2,419,223       | 167,873       | 2,998,697           | 106,861,496   |
| 1908-09..... | 61,709,723                                      | .....        | 522,872   | 852,372         | 82,136        | 1,543,267           | 64,710,370    |
| 1907-08..... | 36,613,185                                      | 28,583       | 276,756   | 1,039,776       | 100,305       | 1,496,822           | 39,555,427    |
| 1906-07..... | 38,919,981                                      | 24,613       | 305,041   | 1,085,098       | 201,339       | 2,608,987           | 63,145,052    |
| 1905-06..... | 45,114,450                                      | .....        | \$152,689 | 733,074         | 188,161       | 1,721,678           | 47,910,052    |
| 1904-05..... | 49,898,366                                      | .....        | .....     | 641,319         | 210,188       | 953,439             | 51,703,312    |
| 1903-04..... | 40,444,250                                      | .....        | .....     | 430,231         | 174,953       | 1,164,785           | 42,214,219    |
| 1902-03..... | 30,436,710                                      | .....        | .....     | 345,431         | 222,400       | 1,516,137           | 32,520,678    |

<sup>1</sup> Fit only for re-manufacture.<sup>2</sup> Included in "India Rubber" prior to 1911.<sup>3</sup> Not stated separately prior to July 1, 1905.<sup>4</sup> Guayule plant.

## United States Imports of Crude Rubber.

OFFICIAL STATEMENT.—FISCAL YEARS ENDING JUNE 30.

|                            | 1909-10.      | 1910-11.     | 1911-12.     |
|----------------------------|---------------|--------------|--------------|
| United Kingdom .....pounds | 15,556,981    | 15,953,233   | 29,728,994   |
| Belgium .....              | 3,813,702     | 4,473,202    | 6,101,346    |
| France .....               | 3,695,703     | 3,157,879    | 4,139,109    |
| Germany .....              | 6,528,147     | 6,151,752    | 8,820,516    |
| Portugal .....             | 1,996,530     | 1,752,468    | 1,449,790    |
| Central America .....      | 1,424,449     | 1,342,939    | 1,390,555    |
| Mexico .....               | 23,486,384    | 853,805      | 2,226,541    |
| Brazil .....               | 39,510,920    | 31,020,764   | 46,762,744   |
| Other South America.....   | 2,503,683     | 2,506,875    | 2,857,173    |
| East Indies .....          | 2,419,956     | 4,624,457    | 6,338,130    |
| Other Countries .....      | 108,226       | 208,886      | 395,275      |
| Total .....pounds          | 101,044,681   | 72,046,260   | 110,210,173  |
| Import value .....\$       | \$101,078,825 | \$76,244,603 | \$93,013,255 |
| Average per pound.....     | \$1.00        | \$1.06       | \$0.84       |

## Net Imports.

|                     |             |            |             |
|---------------------|-------------|------------|-------------|
| Imports .....pounds | 101,044,681 | 72,046,260 | 110,210,173 |
| Exports .....       | 6,492,947   | 5,267,589  | 5,610,951   |
| Net imports .....   | 94,551,734  | 66,778,679 | 104,599,222 |

## OTHER UNITED STATES IMPORTS.

|                      | 1909-10    | 1910-11.   | 1911-12.   |
|----------------------|------------|------------|------------|
| Balata .....pounds   | 399,003    | 878,305    | 1,517,066  |
| Gutta-percha .....   | 784,501    | 1,648,921  | 1,204,406  |
| Waste rubber .....   | 37,364,671 | 26,948,000 | 28,293,192 |
| Gutta-jelutong ..... | 52,392,444 | 51,420,872 | 48,795,268 |
| Guayule gum* .....   | .....      | 19,749,522 | 14,238,625 |

\* (Imports of Guayule gum were included in "India rubber" prior to July 1, 1910.)

## African Rubbers.

NEW YORK STOCKS (IN TONS).

|                       |     |                     |     |
|-----------------------|-----|---------------------|-----|
| August 1, 1911.....   | 90  | March 1, 1912 ..... | 90  |
| September 1 .....     | 112 | April 1 .....       | 80  |
| October 1 .....       | 67  | May 1 .....         | 62  |
| November 1 .....      | 45  | June 1 .....        | 94  |
| December 1 .....      | 60  | July 1 .....        | 62  |
| January 1, 1912 ..... | 58  | August 1 .....      | 85  |
| February 1 .....      | 150 | September 1 .....   | 156 |

## IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

SEPTEMBER 3.—By the steamer *Francis*, from Manáos and Pará:

|                           | Fine.    | Medium. | Coarse. | Caucho.  | Total.    |
|---------------------------|----------|---------|---------|----------|-----------|
| Arnold & Zeiss.....       | 316,200  | 86,400  | 156,300 | 57,300=  | 616,200   |
| Henderson & Korn.....     | 56,400   | 27,300  | 135,400 | 5,900=   | 225,000   |
| New York Commercial Co..  | *115,700 | 26,500  | 28,000  | 40,300=  | 210,500   |
| Meyer & Brown.....        | 14,300   | 1,100   | 15,200  | 21,300=  | 51,900    |
| De Lagotellerie & Co..... | 20,300   | 2,500   | 19,100  | .....=   | 41,900    |
| General Rubber Co.....    | *16,800  | .....   | 6,400   | 6,000=   | 29,200    |
| Robinson & Co.....        | .....    | .....   | 4,600   | .....=   | 4,600     |
| Total .....               | 539,700  | 143,800 | 365,000 | 130,800= | 1,179,300 |

\* Of above, 30 tons for exposition.

SEPTEMBER 16.—By the steamer *Cuthbert*, from Manáos and Pará:

|                          |         |        |         |         |         |
|--------------------------|---------|--------|---------|---------|---------|
| Henderson & Korn.....    | 14,500  | 1,800  | 210,200 | 6,600=  | 233,100 |
| Arnold & Zeiss.....      | 42,200  | 31,100 | 92,500  | 21,800= | 187,600 |
| New York Commercial Co.. | 49,500  | 17,600 | 37,200  | 13,600= | 117,900 |
| Robinson & Co.....       | 15,000  | 5,800  | 12,000  | 400=    | 33,200  |
| General Rubber Co.....   | .....   | 25,700 | .....   | .....=  | 25,700  |
| Meyer & Brown.....       | .....   | 2,600  | 20,200  | .....=  | 22,800  |
| De Lagotellerie Co.....  | 7,500   | 700    | 2,600   | .....=  | 10,800  |
| Total .....              | 128,700 | 57,000 | 382,800 | 62,600= | 631,100 |

## PARA RUBBER VIA EUROPE.

|  | POUNDS. |
|--|---------|
| AUGUST 19.—By the <i>Mayaro</i> =Bolívar:                    |         |
| Gen. Export Com. Co. (Fine)...                               | 18,000  |
| Gen. Export Com. Co. (Coarse)...                             | 18,000  |
| Ed. Maurer (Fine).....                                       | 12,000  |
| Ed. Maurer (Coarse).....                                     | 12,000  |
| Yglesias, Lobo & Co. (Fine)...                               | 7,000   |
| Yglesias, Lobo & Co. (Coarse)...                             | 9,000   |
| AUGUST 26.—By the <i>Kaiserin Auguste Victoria</i> =Hamburg: |         |
| Ed. Maurer (Fine).....                                       | 20,000  |
| AUGUST 27.—By the <i>Colon</i> =Mollendo:                    |         |
| N. Y. Commercial Co. (Fine)...                               | 6,000   |
| F. Rosenstern Co. (Fine).....                                | 6,000   |
| SEPTEMBER 3.—By the <i>Cleveland</i> =Hamburg:               |         |
| N. Y. Commercial Co. (Fine)...                               | 8,000   |
| Ed. Maurer (Fine).....                                       | 5,000   |
| Meyer & Brown (Fine).....                                    | 5,000   |
| SEPTEMBER 5.—By the <i>Carmania</i> =Liverpool:              |         |
| Arnold & Zeiss (Fine).....                                   | 34,000  |
| Arnold & Zeiss (Coarse).....                                 | 5,000   |
| SEPTEMBER 9.—By the <i>Panama</i> =Mollendo:                 |         |
| N. Y. Commercial Co. (Fine)...                               | 10,000  |
| W. R. Grace & Co. (Caucho)...                                | 5,000   |
| SEPTEMBER 12.—By the <i>President Grant</i> =Hamburg:        |         |
| Ed. Maurer (Fine).....                                       | 22,500  |
| Meyer & Brown (Fine).....                                    | 11,000  |
| Rubber Trading Co. (Fine).....                               | 3,500   |
| SEPTEMBER 13.—By the <i>Adriatic</i> =Liverpool:             |         |
| New York Commercial Co. (Fine).....                          | 90,000  |

## OTHER NEW YORK ARRIVALS.

## CENTRALS.

[\*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

|  | POUNDS.  |
|--|----------|
| AUGUST 26.—By the <i>Byron</i> =Bolívia:         |          |
| J. H. Rossbach & Bros.....                       | 80,000   |
| A. Hirsch & Co.....                              | 5,000    |
| AUGUST 27.—By the <i>El Norte</i> =Galveston:    |          |
| Continental-Mexican Rubber Co.....               | *45,000  |
| AUGUST 27.—By the <i>Colon</i> =Colon:           |          |
| G. Amsinck & Co.....                             | 5,500    |
| A. M. Capen Sons.....                            | 2,500    |
| J. Sambrado & Co.....                            | 2,500    |
| Mecke & Co.....                                  | 2,500    |
| Wessels, Kulenkampff & Co.....                   | 2,500    |
| Isaac Brandon & Bros.....                        | 1,500    |
| Suzarte & Whitney.....                           | 1,000    |
| AUGUST 27.—By the <i>Minnehaha</i> =London:      |          |
| Arnold & Zeiss.....                              | 105,000  |
| General Rubber Co.....                           | 30,000   |
| AUGUST 28.—By the <i>Thames</i> =Colombia:       |          |
| G. Amsinck & Co.....                             | 3,000    |
| Maitland, Coppel & Co.....                       | 2,000    |
| Kunhardt & Co.....                               | 1,000    |
| AUGUST 28.—By the <i>Camaguey</i> =Tampico:      |          |
| Ed. Maurer .....                                 | *100,000 |
| New York Commercial Co.....                      | *100,000 |
| Continental-Mexican Rubber Co.                   | *35,000  |
| Arnold & Zeiss.....                              | *35,000  |
| For Europe .....                                 | *110,000 |
| AUGUST 31.—By the <i>Morro Castle</i> =Frontera: |          |
| Meyer & Brown.....                               | 5,000    |
| Charles T. Wilson.....                           | 5,000    |

|                                |        |
|--------------------------------|--------|
| New York Commercial Co.....    | 2,500  |
| Maldonado & Co.....            | 2,000  |
| General Export Commission Co.. | 1,500  |
| For Europe .....               | 6,000  |
| Total .....                    | 22,000 |

SEPTEMBER 3.—By the *Cleveland*=Hamburg:

|                             |         |
|-----------------------------|---------|
| Ed. Maurer .....            | *11,500 |
| New York Commercial Co..... | *7,000  |
| Arnold & Zeiss.....         | *11,000 |
| Total .....                 | *29,500 |

SEPTEMBER 4.—By the *Guantanamo*=Tampico:

|                                |          |
|--------------------------------|----------|
| Continental-Mexican Rubber Co. | *80,000  |
| New York Commercial Co.....    | *35,000  |
| Arnold & Zeiss.....            | *25,000  |
| Total .....                    | *140,000 |

SEPTEMBER 4.—By the *Advance*=Colon:

|                          |        |
|--------------------------|--------|
| G. Amsinck & Co.....     | 10,000 |
| Simon Elias Co.....      | 4,000  |
| Dumarest Bros.....       | 2,500  |
| R. G. Barthold.....      | 2,000  |
| J. Sambrado & Co.....    | 1,500  |
| Roldau & Van Sickle..... | 1,000  |
| Total .....              | 21,000 |

SEPTEMBER 4.—By the *Indian Prince*=Bolívia:

|                            |         |
|----------------------------|---------|
| J. H. Rossbach & Bros..... | 56,000  |
| A. Hirsch & Co.....        | 45,000  |
| Total .....                | 101,000 |

SEPTEMBER 5.—By the *Prins August Wilhelm*=Colon:

|                           |        |
|---------------------------|--------|
| Isaac Brandon & Bros..... | 17,000 |
| A. Rosenthal & Sons.....  | 13,500 |
| G. Amsinck & Co.....      | 11,000 |
| L. Johnson & Co.....      | 5,000  |
| Total .....               | 46,500 |

SEPTEMBER 5.—By the *Olympic*=London:

|                      |        |
|----------------------|--------|
| Arnold & Zeiss ..... | 80,000 |
|----------------------|--------|

SEPTEMBER 6.—By the *Metapau*=Colombia:

|                         |       |
|-------------------------|-------|
| G. Amsinck & Co.....    | 6,000 |
| Caballero & Blanco..... | 2,000 |
| A. Helde .....          | 1,000 |
| Total .....             | 9,000 |

SEPTEMBER 7.—By the *Celtic*=Liverpool:  
Rubber Trading Co. .... 5,500  
Crowley & Co. .... 3,500 9,000

SEPTEMBER 9.—By the *Panama*=Colon:  
G. Amsinck & Co. .... 4,000  
Pablo Calvet & Co. .... 1,000  
Lanman & Kemp. .... 1,000  
Kunhardt & Co. .... 1,000 7,000

SEPTEMBER 11.—By the *Trent*=Colombia:  
Isaac Brandon & Bros. .... 5,500  
Andean Trading Co. .... 3,000  
G. Amsinck & Co. .... 3,000  
A. M. Capen's Sons. .... 3,000  
A. Rosenthal & Sons. .... 2,000  
J. Sambrada & Co. .... 2,000  
Wessels, Kulenkampff & Co. .... 1,500 19,500

SEPTEMBER 12.—By the *Santiago*=Tampico:  
Continental-Mexican Rubber Co. \*35,000  
Chas. T. Wilson. .... \*11,000  
Arnold & Zeiss. .... \*10,000  
For Europe. .... \*60,000 \*116,000

SEPTEMBER 14.—By the *Esperanza*=Frontera:  
Harburger & Stack. .... 7,000  
Chas. T. Wilson. .... 5,000  
E. Steiger & Co. .... 3,500  
Meyer & Brown. .... 2,500  
Geo. A. Alden & Co. .... 2,500  
G. Amsinck & Co. .... 1,500  
H. Marquardt & Co. .... 1,000 23,000

## AFRICANS.

AUGUST 26.—By the *Kaiserin Auguste Victoria*=Hamburg:

Henderson & Korn. .... 11,000  
Arnold & Zeiss. .... 4,500  
Muller, Schall & Co. .... 3,000 18,500

AUGUST 28.—By the *Kroonland*=Antwerp:  
Meyer & Brown. .... 45,000  
Rubber Trading Co. .... 5,000 50,000

AUGUST 28.—By the *Touraine*=Havre:  
Ed. Maurer. .... 25,000

AUGUST 29.—By the *Oceanic*=London:  
Charles T. Wilson. .... 17,000

AUGUST 31.—By the *Cedric*=Liverpool:  
J. T. Johnstone. .... 15,000  
Rubber Trading Co. .... 10,000 25,000

AUGUST 31.—By the *Dinamare*=Lisbon:  
Arnold & Zeiss. .... 34,000

SEPTEMBER 3.—By the *St. Louis*=London:  
General Rubber Co. .... 13,500  
Charles T. Wilson. .... 9,000  
George A. Alden Co. .... 2,500 25,000

SEPTEMBER 3.—By the *Mayaro*=Havre:  
Meyer & Brown. .... 90,000  
Robinson & Co. .... 9,000 99,000

SEPTEMBER 3.—By the *Cleveland*=Hamburg:  
Meyer & Brown. .... 65,000  
W. L. Gough Co. .... 30,000  
Rubber Trading Co. .... 25,000  
Ed. Maurer. .... 30,000  
General Rubber Co. .... 15,000  
Arnold & Zeiss. .... 7,000  
R. Badenhop. .... 7,000 179,000

SEPTEMBER 5.—By the *Carmania*=Liverpool:  
Arnold & Zeiss. .... 30,000  
General Rubber Co. .... 5,000 35,000

SEPTEMBER 7.—By the *Celtic*=Liverpool:  
Arnold & Zeiss. .... 34,000  
General Rubber Co. .... 30,000 64,000

SEPTEMBER 10.—By the *Prince Cecile*=Hamburg:  
Meyer & Brown. .... 35,000  
Ed. Maurer. .... 35,000  
General Rubber Co. .... 5,000  
Rubber Trading Co. .... 7,000

Arnold & Zeiss. .... 3,500  
R. Badenhop. .... 3,500 89,000

SEPTEMBER 11.—By the *Finland*=Antwerp:  
George A. Alden & Co. .... 89,000  
Rubber Trading Co. .... 15,000  
Meyer & Brown. .... 9,000  
Arnold & Zeiss. .... 25,000  
W. H. Stiles Co. .... 9,000  
W. L. Gough Co. .... 3,500 150,000

SEPTEMBER 12.—By the *Majestic*=London:  
George A. Alden & Co. .... 56,000  
Chas. T. Wilson. .... 15,000 71,000

SEPTEMBER 12.—By the *President Grant*=Hamburg:  
Meyer & Brown. .... 140,000  
Ed. Maurer. .... 5,500  
R. Badenhop. .... 5,500  
Arnold & Zeiss. .... 2,500  
Rubber Trading Co. .... 2,000 155,500

SEPTEMBER 14.—By the *Roma*=Lisbon:  
General Rubber Co. .... 33,500

## EAST INDIAN.

[\*Denotes plantation rubber.]

AUGUST 26.—By the *Philadelphia*=London:  
New York Commercial Co. .... \*40,000  
Ed. Maurer. .... \*40,000  
Arnold & Zeiss. .... \*15,000  
Charles T. Wilson. .... \*10,000  
Robert Badenhop. .... \*15,000  
J. Warren Bird. .... \*11,500 131,500

AUGUST 26.—By the *Drachenfels*=Colombo:  
Meyer & Brown. .... \*70,000  
General Rubber Co. .... \*33,000  
New York Commercial Co. .... \*15,000  
Robert Badenhop. .... \*4,500  
Muller, Schall & Co. .... \*2,500 \*125,000

AUGUST 27.—By the *Minnehaha*=London:  
General Rubber Co. .... \*80,000  
Arnold & Zeiss. .... \*60,000  
J. T. Johnstone. .... \*20,000  
Henderson & Korn. .... \*5,000  
Robert Badenhop. .... \*5,000  
General Rubber Co. .... \*11,000  
For Exposition. .... \*34,000 \*222,000

AUGUST 29.—By the *Oceanic*=London:  
Arnold & Zeiss. .... \*110,000  
New York Commercial Co. .... \*50,000  
Ed. Maurer. .... \*33,000  
Robinson & Co. .... \*20,000  
Charles T. Wilson. .... \*20,000  
Robert Badenhop. .... \*7,000  
In Transit. .... \*11,000 \*251,000

SEPTEMBER 3.—By the *St. Louis*=London:  
Arnold & Zeiss. .... \*120,000  
New York Commercial Co. .... \*35,000  
Ed. Maurer. .... \*34,000  
Robinson & Co. .... \*11,000  
Charles T. Wilson. .... \*5,000  
Henderson & Korn. .... \*9,000  
Arnold & Zeiss. .... \*11,000 \*225,000

SEPTEMBER 3.—By the *Comec*=Colombo:  
Meyer & Brown. .... \*115,000  
Ed. Maurer. .... \*11,500 \*126,500

SEPTEMBER 4.—By the *Minnewaska*=London:  
Ed. Maurer. .... \*20,000  
J. T. Johnstone. .... \*15,000  
Raw Products Co. .... \*15,000 \*50,000

SEPTEMBER 4.—By the *Ryndam*=Rotterdam:  
Rubber Trading Co. .... \*15,000  
Meyer & Brown. .... \*11,000  
Ed. Maurer. .... \*5,500  
Robert Badenhop. .... \*5,000  
Henderson & Korn. .... \*4,500 \*41,000

SEPTEMBER 5.—By the *Olympic*=London:  
Arnold & Zeiss. .... \*80,000  
Ed. Maurer. .... \*30,000

New York Commercial Co. .... \*25,000  
Henderson & Korn. .... \*9,000  
Charles T. Wilson. .... \*5,000  
George A. Alden & Co. .... 12,000  
Arnold & Zeiss. .... 11,500  
In transit. .... \*55,000 \*227,500

SEPTEMBER 7.—By the *Celtic*=Liverpool:  
Ed. Maurer. .... \*18,000

SEPTEMBER 9.—By the *New York*=London:  
Ed. Maurer. .... \*65,000  
New York Commercial Co. .... \*25,000  
Arnold & Zeiss. .... \*15,000  
Robinson & Co. .... \*9,000  
Robinson & Co. .... 5,000 \*119,000

SEPTEMBER 10.—By the *Minnehaha*=London:  
Ed. Maurer. .... \*11,500  
J. T. Johnstone. .... \*11,000  
Muller, Schall & Co. .... \*9,000  
For Exposition. .... \*7,000 \*38,500

SEPTEMBER 11.—By the *Finland*=Antwerp:  
Meyer & Brown. .... \*55,000  
Robinson & Co. .... \*9,000  
Arnold & Zeiss. .... \*5,500 \*69,500

SEPTEMBER 11.—By the *Middleham*=Panama:  
J. Warren Bird. .... 11,500

SEPTEMBER 12.—By the *President Grant*=Hamburg:  
Ed. Maurer. .... \*9,000  
Robert Badenhop. .... \*7,000 \*16,000

SEPTEMBER 13.—By the *Majestic*=London:  
Arnold & Zeiss. .... \*60,000  
Charles T. Wilson. .... \*30,000  
Robert Badenhop. .... \*10,000  
Robinson & Co. .... \*15,000  
W. L. Gough Co. .... \*6,000  
Raw Products Co. .... \*5,000  
In transit. .... \*35,000 \*161,000

## GUTTA-PERCHA.

SEPTEMBER 4.—By the *Patricia*=Hamburg:  
R. Soltau & Co. .... 9,000

SEPTEMBER 11.—By the *Middleham*=Singapore:  
L. Littlejohn & Co. .... 22,500

SEPTEMBER 15.—By the *Egremont*=Singapore:  
L. Littlejohn & Co. .... 20,000

## BALATA.

AUGUST 28.—By the *Maracas*=Trinidad:  
Ed. Maurer. .... 2,000  
Middleton & Co. .... 1,000 3,000

SEPTEMBER 4.—By the *Saramacca*=Trinidad:  
Middleton & Co. .... 22,500  
George A. Alden & Co. .... 11,500  
Schutte Bunemann & Co. .... 11,500  
Ed. Maurer. .... 5,500  
G. Amsinck & Co. .... 5,500  
Bartling & De Leon. .... 2,500 59,000

SEPTEMBER 10.—By the *Marowijne*=Demerara:  
Schutte Bunemann & Co. .... 22,500  
G. Amsinck & Co. .... 11,500  
George A. Alden & Co. .... 7,000  
Middleton & Co. .... 7,000  
Frame & Co. .... 2,000  
Wessels, Kulenkampff & Co. .... 1,000 51,000

## BOSTON ARRIVALS.

AUGUST 12.—By the *Walton Hall*=Singapore:  
State Rubber Co. (Ceylon) .... 35,000  
State Rubber Co. (Jelutong) .... 185,000  
Geo. A. Alden & Co. (Jelutong) .... 110,000  
L. Littlejohn & Co. (Jelutong) .... 500,000 830,000

AUGUST 15.—By the *Egremont*=Singapore:  
L. Littlejohn & Co. (Gutta-percha) .... 20,000  
State Rubber Co. (Jelutong) .... 125,000  
Geo. A. Alden & Co. (Jelutong) .... 200,000  
L. Littlejohn & Co. (Jelutong) .... 1,250,000 1,595,000

## EXPORTS OF INDIA-RUBBER FROM MANAOS FOR JULY, 1912 (IN KILOGRAMS).

| EXPORTERS.                    | NEW YORK. |         |         |         | EUROPE. |         |         |         | GRAND TOTAL. |         |
|-------------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|--------------|---------|
|                               | Fine.     | Medium. | Coarse. | Caucho. | Fine.   | Medium. | Coarse. | Caucho. | TOTAL.       | TOTAL.  |
| Zarges, Ohligier & Co.        | 109,332   | 21,717  | 21,296  | 14,540  | 166,885 | 61,388  | 6,560   | 10,359  | 172,651      | 339,536 |
| Adelbert H. Alden, Ltd.       | 20,404    | 17,360  | 9,931   | 349     | 48,044  | .....   | .....   | 2,146   | 2,146        | 50,190  |
| General Rubber Co. of Brazil. | 25,690    | 5,539   | 15,647  | 10,234  | 57,110  | 4,716   | 3,520   | 113     | 2,786        | 68,245  |
| Ahlars & Co.                  | 2,240     | 3,360   | .....   | .....   | 5,600   | 47,435  | 384     | 12,689  | 16,709       | 77,217  |
| De Lagotellerie & Co.         | .....     | .....   | .....   | .....   | .....   | 3,207   | 1,563   | 1,535   | 7,511        | 13,816  |
| J. G. Araujo.                 | .....     | .....   | .....   | .....   | .....   | 1,278   | 661     | 28,418  | .....        | 30,357  |
| Mesquita & Co.                | .....     | .....   | .....   | .....   | .....   | 209     | .....   | 203     | 1,817        | 2,309   |
| Semper & Co.                  | .....     | .....   | .....   | .....   | .....   | 108     | .....   | .....   | .....        | 108     |
| W. Peters & Co.               | .....     | .....   | .....   | .....   | .....   | .....   | 3,110   | 420     | 3,530        | 3,530   |
| Assoc. Comm. do Amazonas.     | 19,890    | .....   | .....   | .....   | 19,890  | .....   | .....   | .....   | .....        | 19,890  |
| Iquites, direct               | 177,556   | 47,976  | 46,874  | 25,123  | 297,529 | 118,341 | 12,688  | 56,507  | 313,269      | 610,798 |
|                               | 231       | .....   | .....   | 11,828  | 12,059  | 12,954  | 432     | 3,051   | 107,295      | 119,354 |
| Total                         | 177,787   | 47,976  | 46,874  | 36,951  | 309,588 | 131,295 | 13,120  | 59,558  | 420,564      | 730,152 |





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## Antwerp.

## RUBBER STATISTICS FOR AUGUST.

| DETAILS.                  | 1912.     | 1911.     | 1910.     | 1909.     | 1908.     |
|---------------------------|-----------|-----------|-----------|-----------|-----------|
| Stocks, July 31.....kilos | 434,311   | 465,734   | 519,965   | 524,512   | 695,551   |
| Arrivals in August—       |           |           |           |           |           |
| Congo sorts .....         | 262,846   | 299,703   | 338,797   | 147,313   | 522,847   |
| Other sorts .....         | 4,900     | 49,906    | 34,574    | 49,199    | 114,542   |
| Plantation sorts .....    | 167,303   | 46,532    | 49,875    | 32,748    | 3,342     |
| Aggregating .....         | 869,360   | 861,875   | 943,211   | 753,772   | 1,336,282 |
| Sales in August .....     | 393,788   | 339,474   | 406,651   | 508,921   | 461,749   |
| Stocks, August 31....     | 475,572   | 522,401   | 536,560   | 244,851   | 874,533   |
| Arrivals since Jan. 1—    |           |           |           |           |           |
| Congo sorts .....         | 1,976,790 | 2,140,816 | 2,139,120 | 2,325,028 | 2,953,211 |
| Other sorts .....         | 95,728    | 318,649   | 244,781   | 660,121   | 448,444   |
| Plantation sorts .....    | 837,342   | 420,749   | 374,452   | 177,535   | 72,084    |
| Aggregating .....         | 2,909,860 | 2,880,214 | 2,758,353 | 3,162,684 | 3,473,739 |
| Sales since Jan. 1....    | 3,108,826 | 2,946,025 | 2,763,303 | 3,513,568 | 3,606,119 |

## RUBBER ARRIVALS FROM THE CONGO.

SEPTEMBER 3.—By the steamer *Leopoldville*:

|   | Kilos.        |
|---|---------------|
| Bunge & Co. ....(Société Générale Africaine)  | 104,400       |
| do .....(Chemins de fer Grande Lacs)          | 14,800        |
| do .....(Cie. du Kasai)                       | 119,300       |
| do .....(Comptoir Commercial Congolais)       | 4,000         |
| do .....                                      | 1,600         |
| Société Coloniale Anversoise.....(Haut Congo) | 11,100        |
| do .....(Comminiére)                          | 5,400         |
| L. & W. Van de Velde.....(Comfina)            | 19,200        |
| do .....                                      | 8,000         |
| Williaert Freres .....                        | 20,000        |
| Congo Trading Co.....                         | 6,500         |
| Charles Dethier .....(American Congo Co.)     | 5,000 319,300 |

